

Original Articles.

WILLIAM HAMILTON AND THE EMBASSY
TO DELHI *

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OF all the medical officers who have served in India during the past three centuries, William Hamilton is probably the most famous, and is certainly the one who has been the greatest benefactor of his country. The story of Gabriel Boughton may be for the most part apocryphal, but there is no doubt of the reality of the services of William Hamilton to his country, and to his masters, the East India Company. Yet his name does not appear in the Dictionary of National Biography, though that work records the lives of at least sixty medical officers of the Indian services, few of whom have done their country service in any degree approaching to that accomplished by him.

William Hamilton was a cadet of the family of Hamilton of Dalzell, and originally came out to India as Surgeon of the frigate *Sherborne*. The whole ship's company appear to have been perpetually in a state of chronic mutiny. Hamilton was not on good terms with the Captain, Henry Cornwall, and, after standing by him in one mutiny, closed his naval career by deserting his ship at Fort St David on 31st May 1711. Several references to Hamilton occur in the Madras records of this period. On 22nd December 1710, Captain Cornwall laid before the Madras Council a complaint against his surgeon (Madras Press Lists, No 336 of 22nd December 1710, Public Consultations, Vol XLI, pp 207, 208). On 13th March 1711, Cornwall again writes that if his surgeon be removed, it will cause a disturbance among his men (M P L, No 450 of 13th March 1711, Letters to Fort St George, Vol XII, p 47). On 4th May 1711, Cornwall writes from Fort St David to the Governor and Council at Fort St George, that Surgeon Alexander (sic) Hamilton had made his escape in a boat from Cuddalore under false pretences, the ships in the roads are to be searched for him, any other surgeon of those at Madras would be preferred (M P L, No. 503 of 4th May 1711, Letters to Fort St George, XII, 101, 102). Finally on 7th May the Council at Madras directed the surgeon of the *Sherborne* to return to his vessel (M P L, No 505 of 7th May 1705, Public Consultation XLII, 95-97). With this entry Hamilton's name disappears from the Madras records of 1711, to appear again under more favourable circumstances in Surman's letters from Delhi.

The surgeon of the *Sherborne*, however, was not to be found. He made his way somehow or other to Calcutta, and was there formally appointed Second Surgeon to the settlement, on 27th December 1711. "We being in great want of another surgeon for to tend all the Honourable Company's servants and soldiers of this garrison, and William Hamilton being out of employ, agreed that he be entertained upon the same allowance and privileges as William James, our present surgeon" (Fort William Public Consultations, 27th December 1711). He appears to have been serving the Company in Bengal for some time prior to his formal appointment, for, in a list of Company's servants in the Bay, in November 1711, appear the following names—

William James, going up with the King's present

William Hamilton, at Calcutta (sic)

Incidentally it throws rather a curious light upon the relations existing between the Company's different settlements in India, two centuries ago, that an officer, who had deserted at Madras, could be, within a few months, deliberately placed upon the establishment at Calcutta.

In the list of salaries paid at Calcutta at Michaelmas, 1712, appear the names of the two Surgeons

William James, Surgeon, half a year at £36—Rs 144

William Hamilton, Surgeon, half a year at £36—Rs 144

The famous Embassy to Delhi started from Calcutta in April 1714, after having been under consideration for at least three years. In the consultations of 5th January 1714, Mr John Surman was appointed chief of the Embassy, Mr John Pratt, second, Mr Edward Stephenson, third, with Hamilton as medical officer. "It being necessary one of our surgeons go up with the gentlemen who go with the present, agreed therefore that Dr Hamilton be sent." Again "Ordered that Rs 350 be allowed Mr Edward Stephenson and Rs 300 to William Hamilton to provide themselves with clothes, &c necessary for their proceeding to the Mogull's court with the present, and that the Buxey pay the same" (Consultations, 26th February 1714). Subsequently Pratt was excused, and "Coja Serhaud," (Khwaja Sahad), an Ayneman merchant, was appointed second in the Embassy, and general adviser. The opportunity of going to Delhi does not seem to have been much sought after, for William James, the senior surgeon, who had originally been appointed to the Embassy, like Pratt, did not go. The list of the Company's servants in Bengal for 18th January 1715, gives the names of all who actually went as follows—

Factor John Surman, arrived 19th August 1707, Chief in ye Negotiation

Factor Edward Stephenson, arrived 2nd February 1709-10, gone with ye present

* See "Notes on the History of the Bengal Medical Service," I M G, January 1901, p 2, and "Preservice Surgeons," I M G, January 1902, p 5

Surgeon William Hamilton, arrived 27th December 1711, gone with ye present

Writer Hugh Baker, arrived 17th August 1711, gone with ye present

Writer Thomas Phillips, arrived 19th November 1711, gone with ye present

Out of six factors on the list, Surman stands first, Stephenson fifth, out of 23 writers, Baker stands eleventh, Phillips fourteenth

Copies of the letters from Surman and Stephenson at Delhi to the Council at Calcutta have been preserved in the Madras records, where they may be found in Volumes 46 to 48 of the Public Consultations. Copies are also preserved in the records of the India Office in London. In Calcutta, where one would naturally expect to find the originals, or at least copies, almost all old records were destroyed at the capture of Fort William by Shajahdaulat in 1756.

The Embassy started in April 1714, remained for a long time at Patna, left Patna on 19th April 1715, and on 4th September 1715 news was received at Calcutta that the mission had reached Delhi.

Extracts from some of the more interesting of the letters, taken from the copies preserved at Madras, are given by Mr J Talboys Wheeler, in his "Early Records of British India" * from which the following passages are quoted —

Delhi, 6th October 1715—"We designed to have presented our petition on the first good opportunity, but His Majesty's indisposition continuing, and Mr Hamilton having undertaken to cure him, it has been thought advisable by our friends, as well as by ourselves, to defer delivering it till such time as it shall please God that His Majesty in some measure returns to his former state of health, which advice, we intend to follow, considering that, whilst he is in so much pain, it can be but a very indifferent opportunity to beg favours of him. The first distemper the doctor took him in hand for, was swellings in his groin, which, thanks be to God, he is in a fair way of curing, but within these few days last past he has been taken with a violent pain, which is likely to come to a fistula, it hinders His Majesty from coming out, so naturally puts a stop to all manner of business, wherefore we must have patience perforce."

Two months later came Surman's letter of 7th December 1715, reporting Hamilton's cure of the Emperor.

Delhi, 7th December 1715—"We write you Honours the welcome news of the King's recovery. As a clear demonstration to the world, he washed himself the 23rd ultimo, and accordingly received the congratulations of the whole Court. As a

reward for Mr Hamilton's care and success, the King was pleased on the 30th to give him in public, viz, a vest, a culgee* set with precious stones, two diamond rings, an elephant, horse, and 5,000 rupees, besides ordering at the same time all his small instruments to be made in gold, with gold buttons for his coat and waistcoat, and brushes set with jewels. The same day Khoja Serhaud received an elephant and vest as a reward for his attendance on this occasion."

The welcome news reached Calcutta on 9th January 1716. It seems wonderfully quick work for a letter to have gone from Delhi to Calcutta in 33 days, 7th December to 9th January, in these days. The Embassy was, however, detained at Delhi for another year and a half. Its members were received by Farakh-Siyah in a farewell audience on 23rd May 1717, when the Emperor announced his intention of keeping Hamilton permanently attached to his person as surgeon, but was induced with difficulty to let him return to Calcutta, on his promising to come back to Delhi after a visit to his native land. This audience and subsequent events are described as follows in a letter from Delhi, dated 7th June 1717, the receipt of which is mentioned in the Calcutta Consultations of 18th July 1717.

Delhi, 7th June 1717—"The 23rd ultimo John Surman received from His Majesty a horse and cunge† as was pre-appointed, and the 30th ultimo we were sent for by Khan Dauran to receive our despatches, which we had accordingly, a serpaw‡ and culgee being given to John Surman, and serpaws to Serhaud and Edward Stephenson, as likewise to the rest of our companions. We were ordered to pass, one by one, to our obeisance, then to move from the Dewan. We did so. But when it came to Mr Hamilton's turn, he was told, the king had granted him a vest as a mark of his favour, but not for his despatch. So he was ordered up to his standing again. Whilst he was performing this, the King got up. We were highly surprised at this unexpected motion, not having the least notice of it till that minute, either from our pation or any of authority, it being near a twelvemonth since Mr Hamilton had been in private with His Majesty, and in all this time not the least notice taken. We were very much concerned at his detainment, and the more because we were assured of his firm aversion to accepting the service, even with all its charms of vast pay, honour, &c, that if the King did detain him by force, if he outlived the trouble of his esteeming imprisonment, he might be endeavouring at an escape, which every way had its ill consequences.

"To free our Honourable Masters from any damages that might accrue to them from the

* "Early Records of British India, a History of the English settlements in India, as told in the Government Records, the works of old travellers, and other contemporary documents, from the earliest period down to the rise of British power in India." By J Talboys Wheeler, late Assistant Secretary to the Government of India in the Foreign Department, Calcutta. Office of the Superintendent, Government Printing, 1875.

* Culgee (Kalgh), a turban ornament

† Cunge (Khangar), a dagger

‡ Serpaw (Sar o pa), a vest, given as a mark of honour, Khilat

passionate temper of the King, our patron Khan Daman was applied to for leave, twice or thrice, but he positively denied to speak, or even have a hand in this business, till our friend Sayyid Sallabut Khan had an opportunity to lay the case open to him, when he ordered us to speak to the Vizier, and, if by any means we could gain him to intercede, that he would back it.

"We made a visit to the Vizier the 6th instant, and laid the case open to him in a petition from Mr Hamilton, of how little service he could be without any physic, language, or experience in the country medicines, or their names, besides which the heart-breaking distractions of being parted for ever from his wife* and children would be insupportable, and entirely take away his qualifications for the King's service, that under the favour of His Majesty's clemency, with the utmost submission, he desired that he might have leave to depart with us. From ourselves we informed the Vizier that we should have esteemed this a very great honour, but finding the doctor under these troubles not to be persuaded, we were obliged to lay the case before His Majesty, and we humbly desired he would use his intercessions to the King, that His Majesty might be prevailed upon to despatch him. The good Vizier readily offered to use his utmost endeavours, and since the case was so, the business was to gain the doctor's despatch without displeasing the King, and he ordered a petition to be drawn up to His Majesty in the same form as that given to himself. It was sent him, and the Vizier was as good as his word, writing a very pathetic address to His Majesty, enforcing Mr Hamilton's reasons and backing them with his own opinion, that it was better to let him go. The King returned an answer, which came out the 6th, as follows: 'Since he is privy to my disease, and perfectly understands his business, I would very fain have kept him, and given him whatsoever he should have asked. But seeing he cannot be brought on any terms to be content, I agree to it, and on condition that after he has gone to Europe and procured such medicines as are not to be got here, and seen his wife and children, he returns to visit the Court once more, let him go.' We hope in God the troublesome business is now blown over."

It was five months later, however, before the Embassy reached Calcutta on its return journey. It was received at Tirbeni, with great pomp, by the President, Robert Hedges, and four of his Council, about 20th November 1717.

Suiman's embassy is not mentioned at all in the "Sen-i-Mutaqherin" Oime in his "Military Transactions," while he refers its success to Hamilton's skilful treatment of the Emperor Farakh Siyar, makes no mention of any special reward to Hamilton, or of any intention to detain him at Delhi.

Stewart, in his "History of Bengal" (pp 397, 398), gives the requests made by, and granted to, Suiman's embassy, as follows. He says that the petition "besides various subjects of complaint from Bombay and Madras, stated the numerous impositions practised by the Nawab of Bengal and his inferior officers. It therefore prayed—

"That a *dustuck*, or passport, signed by the President of Calcutta, should exempt the goods it specified from being stopped or examined by the officers of the Bengal Government under any pretence

"That the officers of the mint, at Moorshedabad, should at all times, when required, allow three days in the week for the coinage of the English Company's money

"That all persons, whether Europeans or Natives, who might be indebted or accountable to the Company, should be delivered up to the Presidency at Calcutta, on the first demand

"That the English might purchase the lordship of 38 towns with the same immunities as the Prince Azeem Ooshan had permitted them to buy Calcutta, Chuttanulty and Govindpore"

A translation of Farakh Siyar's farman is given in Hill's "Bengal in 1756-57," Vol III, p 375, another translation, fuller, but practically much the same, in Bloome's "History of the Bengal Army," Vol I, appendix, p vi

Sir William Hunter* writes thus—"As a matter of fact, while he was curing the Delhi Emperor at the risk of his own life, if the operation went wrong, and exhausting his credit with his august patient to obtain indulgences for the English Company, his Honourable Masters had, in a fit of parsimony on the other side of the globe, done away with his appointment, and ordered "the discharge of Dr Hamilton on his return from Court." From this ingratitude the Directors were spared partly by the fear of losing Hamilton's influence with the Emperor, and partly by Hamilton's death. They wrote grudgingly in their Bengal despatch of January 1717, "Finding by the letters before us how successful he has been in curing the Great Mogul, which very probably will help forward our negotiations and get an easier grant of some of our requests, we now say that, if Dr Hamilton shall desire a continuance in our service, you readily consent to it, and let him see you are sensible of the benefit accruing to us, if you find he any hath, by his undertaking and accomplishing that cure."

It is probable that Hamilton was suffering from sickness, on the return journey, and knew that his end was not far off, for on the 27th October 1717 he made his will at Surajgarh, a small town on the south bank of the Ganges,

* Hamilton never married, he died a bachelor

* "The Thackerays in India, and some Calcutta Graves" By Sir W W Hunter, Henry Froude, London, 1897 (p 33)

twenty miles west of Monghyr. In this will he appoints John Surman his trustee or executor. The provisions of the will are as follows — It will be noticed that all the European members of the Embassy are remembered in it. To his friend James Williamson, five hundred pounds, to Edward Stephenson, five hundred rupees and a diamond ring, to Hugh Barker and Thomas Phillips, diamond rings, to John Surman, the large diamond ring given him by "King Farruckseer," and his *culque*, to the Church of Bengal, one thousand rupees, to his cousin, Miss Anna Hamilton, five hundred pounds, and the residue of his estate to his father, "John Hamilton of Boogs, living in the parish of Bothwell," or in case of his father being dead to be equally divided among his brothers and sisters. The will is given in full by Wilson, in his "Early Annals," Vol II, Part I, pp 293, 294.

Hamilton's will was witnessed by John Cockburne and John Sturt. These names are not among those of the members of the Embassy. They may have accompanied the Embassy, on its return, from Patna to Calcutta. A Dr John Sturt, possibly the same man, died in Calcutta on 1st December 1726. The witnesses proved the will before the Bengal President and Council at Calcutta, on 9th December 1717.

Hamilton died in Calcutta on 4th December 1717, within a fortnight of the arrival of the Embassy, and was buried in the old churchyard in that city, in the ground where St John's Church now stands. When the ground was cleared to build that church in 1787, his tombstone, which had fallen down, and had been covered with earth and forgotten, in the seventy years which had elapsed since his death, came to light. Warren Hastings, then Governor-General, suggested that the lettering should be gilded, and the stone set up in the entrance hall of the church. This suggestion was not carried out. The stone was set up in Job Charnock's tomb, at the north-west corner of the ground of St John's, where it may yet be seen. The tombstone is a granite slab, six feet high and three feet wide, on which the epitaph is carved in relief, in English above, and in Persian below. * It runs as follows —

"Under this Stone Lyes interred the body of WILLIAM HAMILTON, Surgeon, who departed this life the 4th Decembr 1717, his Memory ought to be dear to this Nation, for the Credit he gained ye English in curing FERRUCKSEER, the present KING of INDOSTAN, of a malignant distemper, by which he made his own Name famous at the Court of that Great Monarch, and without doubt, will perpetuate his Memory, as well in Great Britain as all other Nations in Europe."

* A facsimile of the tombstone, with the two epitaphs, is given in "Physician and Friend, Alexander Grant, F.R.C.S., his autobiography and his letters from the Marquis of Dalhousie." Edited by George Smith, C.I.F. London, John Murray, 1902 (p. 6).

ولیم هملٹن حکیم نوکر کمپانی انڈور کہ همراه الہی
انگور حضور برنور رفتہ بود و اسم خود در چہار دانگ نسب
علاج شامدسہ عالم سادہ محمد فرح ستر عربی بلند کردہ
بہار تصدعہ از درگاہ حہاں بہانہ حصہ وٹن حامل نمودہ
بقصای الہی چہارم دسمبر یک ہزار و مئصد و مئصدہ در کلکتہ
موت شد درینجا مدفون است

The Persian epitaph may be literally translated as follows — "William Hamilton, Physician, servant of the English Company, who had gone along with the English Ambassador to the illustrious presence and had raised his name high in the four quarters of the world by reason of the cure of the King of Kings, the Asylum of the World, Muhammad Farakh Siyar the Victorious, with a thousand difficulties having obtained, from the Court of the Asylum of the World, leave of absence to his native land, by the decree of God on the 4th December 1717, died in Calcutta, and in this place was buried."

When the news of Hamilton's death in Calcutta was reported to the Emperor, it is said that he sent a special messenger to Calcutta to ascertain whether the report was true, or had been published simply with a view to enable Hamilton to escape fulfilment of his promise to return to Delhi. Farakh Siyar himself, however, was not to enjoy the imperial dignity much longer, he was deposed and assassinated in 1719.

AN EPIDEMIC OF MALIGNANT JAUNDICE IN BOMBAY

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THERE is at present (November 1906) occurring in Bombay an interesting epidemic of malignant jaundice. The cases have been met with here and there for the last three months, and appear to be becoming more frequent, at least as far as experience at the Jamssetjee Jeejeebhoy Hospital is concerned. They seem to be scattered about the Byculla District of Bombay, a poor and crowded quarter, inasmuch as these cases, so far, have not been met with in the Goculdas Tejpal and other hospitals.

It has been known for some time that cases of jaundice have become common in Bombay, and some months ago attention was drawn to the fact in the lay press. Owing to the fact that the medical wards of the J. J. Hospital are always so full, only the worst cases can be admitted, and, consequently, we may exaggerate the mortality of the disease from a review of the hospital cases alone. Of the ten cases on which I append some notes, nine ended in death with acute symptoms.

They present the usual symptoms of acute yellow atrophy. Some commence with acute symptoms, especially those which develop in association with pregnancy, others commence with symptoms of a somewhat acute gastroenteritis, the jaundice and mental symptoms coming on after ten days or more. In all cases, except one, the liver was reduced to about half the normal size. Fever is marked in a few, and generally most toward the end of the case. Leucin has been present in the urine of practically all, and tyrosin has not been seen, perhaps because we did not take sufficient pains to concentrate the fluid. Nevertheless, Major Meyer informs me that in an acute case which he saw in private, where there was black vomit and early coma, there was tyrosin in the urine, and in one of the cases under my care tyrosin crystals could be seen in sections of the liver.

Inasmuch as this must be a microbial infection, I very much regret that, owing to the pressure of other work, I was unable to make any bacteriological observations. No doubt, if the epidemic continues, this will be done. Bacteriological investigations, however, in this disease and in this climate are difficult, inasmuch as the subjects so rapidly develop *post-mortem* changes, and *post-mortem* invasion by microbes is early.

The group of ten cases here described was distributed among several physicians, and I am obliged for their kind permission to make use of the notes.

There have lately arrived in Bombay a large number of pilgrims from Central Asia. We have seen a number of them at the hospital for various diseases, and one of them died from acute yellow atrophy of the liver. I have not been able to find anyone who could act as interpreter, and consequently have not been able to elicit any facts about their antecedents. Whether they have introduced the disease I do not know.

I—I H, Hindoo male, aged thirty four, a *ryce*, resident of Bombay, was admitted in an unconscious state, under Dr Meyer, on the afternoon of the 8th of September, and died in twenty four hours. He was found by a policeman insensible in one of the gullies near the Hospital.

On admission he was quite unconscious, surface of body cold, pulse irregular, 88 per minute. Respirations somewhat laboured. Frothy sputum covered the mouth. There was a serous discharge from one ear. There were contractions of the muscles, and the body was in a condition of opisthotonos. Temperature 96°. He was given enemata and heart stimulants. The pupils were noted as being large, and not reacting to light.

In the evening of the same day there was some vomiting. The evacuated stuff was at first like coffee grounds, and contained blood, and later became clear.

Death occurred in coma. The temperature gradually rose throughout the last day of life, from 96° to 101.6°. No notes about the condition of the urine.

Autopsy—A middle aged man, muscular, rigor mortis passing off. Jaundice marked. One broad adhesion at the base of the left lung. All the viscera stained yellow, especially the pericardial sac. *Post-mortem* changes already evident.

Hypostatic congestion of the lungs. No excess of fluid in the pericardium. The heart is flabby and fatty. There is *post-mortem* staining of the endocardium. Valves of heart healthy, one patch of atheroma at the end of the transverse aorta.

Liver small and flabby. *Post mortem* staining and some mottling of the surface. Capsule markedly wrinkled. Spleen enlarged, hard and fibrous. Kidneys enlarged and fatty, the capsule stripping fairly easily.

The brain showed no changes, except marked congestion.

The liver weighed 3830 grammes, spleen 308, kidney 160, heart 206, lungs 625 grammes.

Sections of the liver showed extensive necrosis of the hepatic cells, but were spoilt by *post mortem* decomposition.

II.—Sakoo Gopala, Hindoo female, aged forty, lately an arrival from Poona, admitted under Dr Meyer on September 14th, and died on the 18th. She had been ill six days before admission. Had aborted outside the hospital. Symptoms—Jaundice, coma and convulsions.

Autopsy—Performed ten hours after death. Rigor mortis passing off. The surface of the body was jaundiced, and there was general emaciation. The pleural cavities were free of adhesions, and the lungs merely showed hypostatic congestion at the bases and posterior parts. Pericardium slightly stained yellow. No excess of fluid in the sac. Some ecchymoses on the outer surface. Heart substance somewhat fatty, and the endocardium stained. All the valves normal.

Liver weighed a little less than 1100 grammes. There was slight wrinkling of the capsule, and the substance of the organ was soft and of the colour of bile.

Spleen a little enlarged, substance pale. Kidney rather granular cortex very thin, and the capsule stripped with some difficulty.

The pia mater was congested generally, brain substance firm, both ventricles healthy, arteries at the base of the brain atheromatous, pons healthy, cerebellum normal. Sections of the liver show a smaller degree of disintegration of the hepatic cells than in the others of this series, which is only to be expected considering the smaller relative diminution of the liver volume. The hepatic cells are dissociated and stain fairly well. But here and there in the lobules are small wedges of absolutely necrosed tissue with an occasional complete hepatic cell standing out against the debris. Leucin is present in considerable amount, generally apart from the cells, but occasionally within them. The interlobular connective tissue is greatly thickened, highly nucleated and thrown into folds, entangling here and there a few hepatic cells. Many of the interlobular septa have, however, completely disappeared.

III.—Amirbai, Mohammedan female, aged thirty, pregnant for the third time, ninth month. Admitted under Dr Dymock, in the early morning of October 20th, died on the night of the 22nd. The child was born dead. Admitted unconscious after the birth of the child. The conjunctivæ were yellowish but the skin was not noticeably yellow. There was no vomiting. No hepatic dullness could be made out. The urine was free of albumen, specific gravity was 1010, and contained a considerable quantity of bile. I could find no evidence of leucin or tyrosin. She remained comatose till death took place. This occurred on the sixth day of the illness. *Autopsy* not permitted.

IV.—Gungoo Sadoo Primipara, aged twenty-five. Admitted under Dr Dymock on September 19th and died on the following day. Fifth month of pregnancy. The presentation was transverse, and abortion took place, the right arm presenting and spontaneous evolution occurring. She had been in good health throughout the pregnancy. Both the conjunctivæ were tinged yellow. She was somewhat restless on admission and complained of much pain in the abdomen, doubtless owing to the uterine contractions. No vomiting or nausea. Temperature normal. Pulse quick and soft. Respiratory system normal, and respirations not

accelerated Food retained without difficulty and she could answer questions intelligently

At about 2 P.M. the same day, strong uterine contractions came on and the foetus was expelled as described. After the delivery the patient became suddenly more restless, and remained in this condition during the night, and by the following morning was unmanageable. By this time the conjunctivæ were deeply yellow. Urine was drawn off by catheter and examined. Specific gravity 1015, a slight trace of albumen, no sugar, bile in quantity. No leucin or tyrosin to be seen. There were some red blood corpuscles present, and a few epithelial casts.

No hepatic dullness could be made out anywhere. There was no enlargement of the splenic dullness. The tongue was dry but clean. Respirations and pulse accelerated. By the morning the patient had become comatose.

In the evening, as swallowing was impossible a nasal tube was passed and dark coloured blood welled up. The tube was promptly removed. The breathing became stertorous and she died one hour after. Autopsy not permitted.

V—Adithi Herra, aged 28, Hindoo female, of the sweeper caste. The patient was admitted into the Bai Motilal Hospital under myself on the evening of the 19th October, during the absence on leave of Dr Dimmock—in an unconscious state, temperature 99.2, pulse full and bounding, and 130 per minute. She had been in good health up to the onset of the present illness, she is eight months pregnant.

The illness commenced abruptly at 3.0 P.M. on the day preceding admission, with an attack of vomiting, since this she has been unable to retain any food in the stomach. During the night of the same day, she became very restless, tossing excitedly about in her bed, and being difficult to restrain. Gradually she became unconscious. As she appeared to be growing worse, her relatives brought her up to the hospital.

After the acts of vomiting had ceased, she complained of great pain in the abdomen.

On admission the patient was in a semiconscious condition, but showed continuous restlessness, throwing herself from one side of the bed to the other. Gravid uterus filling up most of the abdomen, the epigastrium being slightly full and tympanic, liver dullness could not be made out from the front. Area of splenic dullness not increased. Lungs clear, respirations accelerated. Heart sounds normal. The urine showed a specific gravity of 1020, no albumen or sugar, bile present in quantity. Microscopically an abundance of amorphous urates and some epithelial casts, and no sign of leucin or tyrosin.

When seen by me on the evening of the 20th, the condition was as follows.—Not quite insensible, stertorous breathing. Pulse 142 per minute, full and of high tension. Tongue slightly coated and moist. Sweating about the face, rest of skin hot and dry. Corneal reflex present. Distension of the epigastric region with gas. Uterus midway between the umbilicus and the ensiform cartilage. Hepatic dullness. About one finger's breadth of diminished resonance at the fourth rib in the parasternal line, similarly at the nipple line, about two fingers' breadth of diminished resonance at the fifth rib in the mid axillary line. At the back, liver dullness begins at the centre of the ninth rib and extends upwards for five fingers' breadth. In the posterior axillary line, it begins at a little higher level and extends upwards for three fingers' breadth, curling upwards to the area of diminished resonance mentioned before. No sign of any subcutaneous hemorrhages. Vomited once this morning after food. Bowels constipated. The enema given at midday was rejected without any result. Temperature 101.8°.

The urine is passed unconsciously into the bed, and the fluid stains the sheets yellow. A few drachms of urine drawn off by catheter, Gmelin's test showed the presence of bile therein.

Heart's apex diffused but most marked in the third intercostal space, an inch and a half inside the nipple line. Heart sounds forcible but normal. Breath sounds normal. She remained in practically the same condition during the following day (a living female child being born in the afternoon), the commencing deepening and the pulse increasing to 160 per minute and the respirations to 48. The temperature continued to rise throughout the day and reached 105° by the evening, when she died.

The child was of low vitality and died forty eight hours after birth. There was a tendency to post partum hæmorrhage shortly after the delivery, which was checked by compression of uterus.

Autopsy—A partial examination of the abdomen only was permitted. The liver was of a bright yellow colour and weighed 860 grammes, the spleen 185 grammes and the right kidney 115 grammes. The peritoneum was stained yellow and the intestines distended. There was no hæmorrhage in the stomach. The urine examined by me on the last day of the illness, showed bile, no albumen or sugar, but a considerable amount of leucin crystals but no tyrosin. The reaction was neutral.

Liver Section—Cells dissociated, badly staining. Interlobular tissue thickened, nucleated, thrown into folds. Multinucleated hepatic cells at the edge of some of the lobules in connection with outgrowing strands of interlobular tissue. Capsule of liver thickened and well defined. Here and there immature biliary canals.

Kidney tubules distended, cells large and granular. Extreme intertubular exudation. Glomeruli large, distended, highly nucleated glomerular capsules thin or ruptured. Leucin globules present.

VI—Luxumi Ranoo, Hindoo female, aged 32. Admitted October 11th under Dr Vakil, died October 25th. On admission she complained of abdominal pain and swelling of the legs. She had been ill for twenty one days, the illness having commenced with diarrhoea and fever, the motions containing mucus. Fifteen days before her entrance into hospital she had aborted, the pregnancy being at the seventh month. Was indefinite in her statements as to the commencement of the jaundice, but declared this symptom came before the cedema of the lower limbs.

On admission, pulse 92, temperature 100.2°, respirations 22 per minute.

Ptychæ alveolaris present, visible mucous membranes anæmic. Complaint of thirst. No vomiting. Pain complained of in the umbilical region, slight abdominal distension. Dullness in the flanks, resonance in front. Respiratory system normal. Heart normal, but sounds feeble.

Urine dark yellow, specific gravity 1002, bile in quantity. No leucin or tyrosin found. Albumen and sugar absent.

Autopsy—Nineteen hours after death, rigor mortis had passed off. Sclerotics and body surface stained yellow. There was plenty of subcutaneous fat which was stained a deep yellow, and the visceral peritoneum was tinged of the same colour.

The uterus was enlarged in accordance with the clinical history, the placental site was healthy.

The liver was small and hidden behind the arch of the diaphragm when the abdomen was opened, being on a level with the fifth and sixth ribs in the mammary line.

There were some old adhesions at the left base, and on the front of the right lung. There was a moveable left kidney. There was an old corpus luteum in the left ovary. Weights of the organs: heart 240 grammes, lungs 850 grammes, liver 770 grammes, spleen 150 grammes, kidneys 220 grammes.

Liver small, saffron yellow in colour on section. The capsule was markedly wrinkled, and the hepatic substance showed hemorrhagic spots here and there.

The kidneys showed subcapsular ecchymoses, the organs were fatty, hemorrhagic, and deeply bile stained,

and showed persistence of the foetal lobulation Spleen normal The heart was flabby and fatty The right ventricle was flaccid and its walls very thin Valves normal The endocardium showed *post mortem* staining

The peritoneal cavity contained about a pint and a half of yellow serous fluid

Examination of the large bowel showed the healed pigmented ulcers of an old dysentery, from the descending colon to the rectum Here and there some fresh small dysenteric ulcers were also seen Except for the fact that it was deeply bile stained, the mucous membrane of the small bowel was quite normal

Sections of the liver show almost complete disappearance of hepatic cells, nothing being seen except deeply staining nuclei in a delicate fibrous reticulum, or among finely granular debris Here and there separated groups of partially dissociated hepatic cells A few globules of leucin present Almost complete disappearance of the interlobular connective tissue, which were present, is thrown into irregular folds

VII—Z B, aged 38, a pilgrim from Bokhara, said to have been ill eight days, admitted into my wards on November 9th in the afternoon, and died the following morning His language could not be understood

Was restless and in evident distress Slightly emaciated, sclerotics tinged yellow, but not intensely so Emphysematous chest Apex beat neither seen nor felt, but best heard in the fifth intercostal space Lips dry, teeth dirty Tongue coated, but moist Marked constipation Abdomen slightly tender

The liver dullness began at the upper border of the seventh rib in the mammary line, and extended almost to the costal margin The upper limit of dullness was at the upper border of the ninth rib in the interior axillary line, posteriorly it was impossible to make out any dullness There were occasional purposeless jerky movements of the extensors of the wrists

Some urine was drawn off by catheter No albumen or sugar, reaction acid No leucin or tyrosin seen microscopically Restlessness passed into coma, in which he died on the following day Autopsy not permitted

IX CASE OF MALIGNANT JAUNDICE ENDING IN RECOVERY

W S, aged thirty, a painter, native of Madras, resident in Bombay, admitted into my wards October 30th with a diagnosis of dysentery He had been unable to obtain sufficient food for the fortnight previous to admission He had been ill for six days previous to admission, with a somewhat severe diarrhoea On admission the stools were frequent, offensive, and dark in colour Heart and lungs normal General abdominal tenderness

Urine normal No sign of jaundice, and the case was regarded as one of ordinary enteritis, and treated with intestinal sedatives and milk diet

On the following day the diarrhoea continued, and the patient appeared weak and depressed On the sixth day after his admission jaundice appeared, and the irritability of the bowels ceased The tongue was furred Abdominal tenderness most marked on the right side Spleen could be felt two inches below the costal margin He was decidedly stupid, and resented disturbance On the eighth day jaundice was more intense Drowsiness was also more marked, but he could be made to respond to simple orders The liver dullness extended from the upper border of the seventh rib in the right parasternal line for one inch and a quarter downwards In the right mammary line the dullness commenced at the upper border of the ninth rib and extended downwards for three quarters of an inch No hepatic dullness could be made out posteriorly During the preceding night he had been noisy and delirious There was incontinence of urine, probably due to the man's stupid condition, hence a catheter was passed and a few ounces drawn off Specific gravity 1012 No crystals

of leucin and tyrosin could be found even after concentration by partial evaporation

On the ninth day, he was rather more sensible Urine again found natural, and free from bile

On the tenth day, was quite sensible, but intensely jaundiced, and very weak and exhausted

On the twelfth day, the jaundice began to disappear

On the thirteenth, there was noticed a decided paresis of the muscles of the left side of the face

On November 15th, the seventeenth day after his admission, the man seemed to be convalescent The jaundice was only slightly marked He appeared to be quite sensible, but feeble minded as the result of an exhausting illness Tongue slightly furred, breath very foul The liver dullness was obliquely placed, being on a higher level towards the sternum In front it extended from the lower border of the fifth rib four fingers' breadth downward, passing backwards and downwards, being three fingers' breadth in vertical measurement on the right side of the thorax and the hepatic dullness ended in a point at the posterior axillary line Spleen still large Abdomen rigid and slight epigastric tenderness Emaciated but gradually improving

X. CASE OF FATAL MALIGNANT JAUNDICE WITH ENLARGEMENT OF THE LIVER

T M, male cooly, living in Parel, aged thirty Admitted from the out patients under me on November 13th, and died early on the following morning Was intensely jaundiced, mind fairly clear, gave a history of seven days' continuous fever The liver and the spleen were both enlarged, but the belly walls were kept very tense, and the chief complaint was of great abdominal pain On admission temperature 100°, and it rose throughout the day gradually to 101.8° He was very delirious all day There was no vomiting. An enema was returned without change Micturition was involuntary Respirations 32, pulse 120 in the evening No convulsions There were restless movements and continual groaning till death took place

Autopsy made five hours after death Body of a young man well nourished Intense jaundice Rigor mortis present and general Lungs free from adhesions Slight excess of yellow fluid in the pericardial sac There were many dense and old adhesions about the enlarged spleen All the viscera deeply stained yellow Oesophagus normal

Tracheal mucous membrane injected General subpleural ecchymoses Splenization in the right lower lobe, the back of the right upper lobe, and of the left lower lobe of the lung Heart large—subepicardial ecchymoses on the anterior and posterior aspects Left ventricle hypertrophied, with an *ante mortem* clot in the left auricle Thickening of the bases of the mitral flaps Penetration of one of the cusps of the aortic valves In the right side of the heart a large *ante mortem* clot extending to the pulmonary artery The right ventricle was thick walled

Liver, large, yellow and substance fatty Gall bladder contained a little thick ropy bile Opening of the common bile duct patent Weight of the liver, 1,800 grammes Spleen large, hard, slightly congested and friable Kidneys, extremely fatty and hemorrhagic and enlarged The capsule stripped easily The cortex was injected

There were submucous ecchymoses in the duodenum, and a slightly catarrhal condition of the small bowel There were general petechiae in the mucous membrane of the stomach Weight of heart, 230 grammes, of spleen 450, of each kidney, 160 grammes

The case was one of malignant jaundice, with enlargement of the liver and spleen due to malaria

Sections of the liver showed the hepatic cells to be slightly dissociated, nuclei well staining and the protoplasm staining badly Leucin globules seen Masses of pigment as in a malarial liver Many lobules retain their shape, but others have fused

AN EXPERIMENTAL INVESTIGATION AS TO THE POTENCY OF VARIOUS DISINFECTANTS AGAINST RAT-FLEAS

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In the previous paper, *Indian Medical Gazette* July 1906, I gave the observations that led to this series of experiments being undertaken, described the procedure adopted and gave a table of results in connection with No 1 Phenyle, Izal, Carbolic (Crystallized Commercial) and Perchloride of Mercury in acid solution. Cyllin Lysol and Crude Phenyle (No 2) I had no opportunity of testing, but I expressed an opinion that they would probably be found as effective as Phenyle No 1 and Izal. As will be seen this is not altogether so, Crude Phenyle has come fully up to expectations, Cyllin is less powerful than expected, and Lysol has failed altogether. Jeye's Fluid which is simply a crude form of Cyllin gives as good results as the pure preparation at half the price.

CRUDE OIL EMULSION

This is much the most important of any of the preparations tested as in a widely distributed pamphlet issued by the Imperial Entomologist, Mr H. Maxwell Lefroy, entitled, "The Destruction of Fleas by Insecticides." It is claimed that the absolute destruction of fleas is best obtained by washing floors with Crude Oil Emulsion, in a ten per cent mixture with water. It is said to be the best contact poison known, as the result of three years' thorough and practical tests. The latter statement is not only not corroborated by my experiments, but is directly contradicted. The probable explanation is that the bulk of the practical tests referred to were made not in connection with the rat-flea, an insect of exceptional powers of resistance, but with soft insect pests of feeble resistance, such as Aphids, Mealy bug, Leafhoppers, Caterpillars, &c. That it effectually destroyed fleas in ten per cent solution is no doubt perfectly correct, but the fact that such a strength is required puts it absolutely out of count when compared with an insecticide like Izal or Phenyle in which 1—5 to 1—8 per cent is effective. The following are exact details of the experiments carried out. The emulsion was obtained direct from Messrs McDougall and Company, Bombay. The emulsion is described as consisting of 80 per cent of Crude Oil with 20 per cent of whale oil soap. Two grammes of this brown jelly were carefully weighed out and thoroughly mixed with 100 cubic centimetres of water giving a solution of 1 in 50, the strongest dilution that has been tested in any of the preparations except in the case of Carbolic, where the ordinary surgical strength of 1 in 40 was tried. Thorough emulsification was carried out in a stoppered bottle, and the agitation was kept up by an assistant till the actual moment of ad-

ding it to the fleas. In order to eliminate any chance of a flea being entangled in an oily flake, the top layer of the emulsion was flicked out of the test tube. The emulsion rapidly clogs the filter so as soon as the test tube with the immersed fleas was emptied into the filter a large bulk of water was added. The general result of this was to bring the fleas to the top when they were lifted out and placed on clean filter paper to dry. Almost without exception they recovered completely within two or three minutes, but in some cases they were already moving before they could be removed from the filter. In the experiment in which only one recovered there were only two fleas in the tube. In the fourth experiment the fate of one of the fleas was doubtful as the filter paper got broken and let this flea slip into the receiving glass. Four experiments were carried out, all with the same result, but in order to make assurance doubly sure I asked Dr. Dutt, Analyst to the Corporation to kindly carry out check experiments. These more than confirmed mine for they showed that one flea, a large female, recovered after two immersions first in a ten per cent emulsion for 30 seconds, and second another immersion in the same strength for 45 seconds. In another experiment the same flea had been used before in a previous one. The technique used by Dr. Dutt was slightly different from my own, and perhaps better adapted for rapid washing and drying. The tube with the immersed flea was emptied on a large pad of blotting paper which immediately soaked up the emulsion leaving the fleas dry. They were washed with a little water, dried with fresh blotting paper and generally recovered immediately. It may be noted that it is very difficult to define exactly the duration of motion and some margin of error must be allowed, the flea is apt to curl up and sink to the bottom in about 10 seconds, but after lying motionless there may show convulsive movements some seconds later. These are very easily overlooked, particularly if the solution be a turbid emulsion. I suspect that in some of my earlier observations the duration of motion was under estimated. In the thick oil emulsion it was generally impossible to estimate it at all.

PRACTICAL CONCLUSIONS

As regards flea killing pure and simple as distinguished from general plague disinfection, Table IV which sums up the results of the experiments by shewing the different preparations arranged in order according to the cost of 500 gallons of the strength shewn to be requisite, is too clear to require comment. However the ideal we are in search of is not a disinfectant that will only kill fleas, but one that will also kill the plague germ in whatever situation it finds it. Cyllin as has recently been demonstrated at Guindy by Captain J. W. Cornwall, R.M.S., is the most desirable disinfectant for

plague, and is now allowed by Government as a substitute for Perchloride of Mercury in plague operations, but, unfortunately, it is only sixth in the list of flea-killers. Phenyle heads the list of flea-killers, but is low down in the scale of plague disinfectants requiring a strength of 1-50 for use on clay floors. The most practicable suggestion seems to be to use equal quantities of Cyllin and Phenyle No 2 in a strength of

1-400 or 1-200 for the mixture. This would cost Rs 7-4-0 per gallon which used in a strength of 1-200 would mean Rs 18-2-0 per 500 gallons of disinfectant. If this be compared with Perchloride of Mercury which is quite inefficacious against fleas, but costs Rs 29-0-0 per 500 gallons of a strength of 1-500 the enormous advantage and economy of the suggested mixture is evident.

TABLE I

Showing result of Immersion of Rat-Fleas in various disinfectants

Name of Disinfectant	Strength	Duration of motion in seconds	Duration of Immersion in seconds	Recoveries	REMARKS
Cyllin	1-200	10	30	2	
Do	1-200	15-20	60		
Do	1-400	10	60		
Do	1-500	20	60	2	
Do	1-500	10	60	3	
Do	1-600	15	45	3	
Do	1-600	12	60	2	
Do	1-800	15	90		
Jeyes Fluid	1-200	30	60		
Do	1-300	30	60	1	
Do	1-400	35	60		
Do	1-400	20-30	60	2	Partial recoveries Fleas unable to jump about
Do	1-500	30	60	3	
Do	1-800	20	60	3	
Phenyle No 2	1-400	15-30	60		
Do	1-500	20-30	60		
Do	1-600	15-30	60	2	The fleas only moved their limbs feebly for a moment
Do	1-800	20-35	60		
Crude Oil Emulsion	1-50	?	60	1	Only two fleas in test tube
Do	1-50	15	60	3	
Do	1-50	?	60	3	
Do	1-50	15	60	2	One flea lost

TABLE II

Experiments by Dr Jagendra Nath Dutt as to efficacy of Crude Oil Emulsion

No	Strength	Duration of motion in seconds	Duration of Immersion in seconds	Recoveries	REMARKS
1	1-50		10	2	2 fleas, recovery almost immediate
2	1-50		30	2	2 fleas, shortly after being dried on filter paper
3	1-50		60	2	2 fleas, recovery took 1½ minutes
4	1-10		10	2	2 fleas, revived but do not jump probably owing to a little oil sticking to them. Both eventually recovered but crippled
5	1-10		30		1 flea
6	1-10		30		1 flea. This had already been used in experiment No 1
7	1-10		30	1	1 flea. Recovered and was used for next experiment
8	1-10		45	1	This flea had already been used for experiment No 7. It took 7 minutes to recover, it walked freely but could not jump. It is a very large female

TABLE III

Disinfectants arranged according to efficacy and cheapness

CHEAP AND EFFECTIVE

Name	Cost per Gallon in rupees	Strength recommended	Cost per 500 gallons
Phenyle No 2	Rs A P 2 4 0	1-500	Rs A P 2 4 0
Do No 1	3 0 0	1-500	3 0 0
Izal	4 8 0	1-500	4 8 0
Jeyes Fluid	2 3 0	1-150	6 9 0
Cyllin	5 0 0	1-150	15 0 0

DEAR AND INEFFECTIVE

Name	Cost per Gallon in rupees	Strength recommended	Cost per 500 gallons
Perchloride of Mercury in H Cl *	Rs A P 14 8 0	1-200	Rs A P 72 8 0
Carbolic	8 0 0	1-40	96 0 0
Crude Oil Emulsion	1 12 0	1-10	87 8 0
Lysol	13 0 0	not known	Over- 130 0 0

* The strength 1-200 refers to perchloride required but the price to the 1-2 solution in acid

A YEAR'S EXPERIENCE OF MALARIA AT THE OUT-DOOR DEPARTMENT OF THE MEDICAL COLLEGE HOSPITAL, CALCUTTA *

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CAPT, I M S,

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The following figures relate to blood examinations made during the months June 1905 till May 1906 inclusive

The patients belonged to many races and came from all parts of the world, but as about nine tenths of them had been domiciled in Bengal for at least a year, the figures may be taken as illustrative of malaria in Bengal

The method of investigation was, as follows in all cases in which the history suggested the possibility of malaria, either as the primary cause of the patients symptoms or as a complication, a blood film was made after the method of Stephens and Christophers, the patient's name being scratched on the film by the needle. The notes of the case were then recorded by one of the students in a book ruled in columns with headings for each of the points which it was desired to bring out, so that the taking of notes and the analysis of the cases could be carried out very easily and quickly

The film was stained by Leishman's method and the result of the examination entered into the book the next morning, and the same time a specimen was shown to the students so as to interest them in the work and to enable them to form clear and accurate ideas on the subject of malaria

The blood was examined in many cases where there was not much likelihood of parasites being found, as it was found that the students as a rule were much to prone to regard all fevers as malarial, and it was considered more satisfactory to settle the diagnosis in these cases by a blood examination rather than by a dogmatic expression of opinion

Altogether, parasites were found in only about one third of the cases in which the blood was examined, so that it will be seen that a liberal margin was allowed for cases of doubt

The cases in which no parasites were found were in some instances true malaria, the negative result being due to I—The fever being of only one or two days duration and the parasites being absent from the peripheral blood, or present in such small numbers as to be easily missed II—The previous administration of quinine It may, however, be taken as a rule that when quinine has not stopped the fever the parasites will still be found, and in some cases, even amœboid forms can still be found after the fever has been controlled III—The infection being so slight that the parasites might readily be overlooked on a short examination (about ten minutes was spent on each slide) There is no doubt that cases of this kind occur, but judging by the instances in which unusually prolonged examination was made, it is probable that the percentage of cases of this kind is not large, and besides these cases are rarely of much importance

In the vast majority of cases in which no parasites were found, the disease was not malaria, but some other febrile affection, while in many instances subsequent observation of the patient in hospital showed that he probably never had fever at all, there being a marked tendency among Indian patients to ascribe any form of physical ill to "Fever"

There were also many cases in which there were indications of disease sufficient to account for the fever, but the possibility of the case being complicated by

malaria could not be overlooked, and it was more satisfactory in such cases to be able to exclude malaria at the outset, and so to get rid of the distracting doubt which is so apt to paralyze one's energy in the matter of treatment In the cases admitted to hospital it was usually possible to find parasites in at least four fifths of the cases which showed distinct evidence of being malarial, but in an out door dispensary the inaccuracies of the history and the lack of opportunity of careful examination and observation of the case makes diagnosis a matter of great difficulty, and the blood examination rescues a considerable number of cases from the region of doubt

It is only with the cases in which an absolute diagnosis has been made that the following figures deal

The figures have not been reduced to percentages, as it does not appear advisable to suggest mathematical accuracy or finality for the data, but merely to convey general impressions as to the main features of malaria as seen in Bengal, and these impressions can be obtained by a glance at the tables

The total number of cases recorded in the various tables is not always the same, as in some instances complete notes could not be obtained, but the figures in all cases refer to a series of cases without selection

The first table shows the seasonal prevalence of the various forms of infection, and it may be noticed that there are four times as many cases in the six months, August till January, as in the other six months of the year

The Malignant Tertian cases are specially concentrated, there being more than five times as many cases in the six malarial months as in the other six

The quartan cases are fairly uniformly distributed over the year, and though the figures are small it is fairly obvious that there is no malarial season for quartan infections in Bengal

Table showing the Seasonal Prevalence of Malaria in Bengal

	Malignant Tertian	Benign Tertian	Quartan	Total
June	4	1	1	9
July	7	2	2	11
August	13	11	4	28
September	21	18	0	43
October	41	14	3	61
November	59	20	4	63
December	26	16	3	45
January	16	9	6	31
February	3	9	6	18
March	5	2	3	10
April	6	7	1	12
May	5	2	1	8
Total	193	112	34	339

The Malaria Commission in their visit to Calcutta came to the conclusion that malarial infection was not, in Calcutta and for this reason the most careful enquiries were directed to ascertaining the probable locality in which the infection had been contracted and after eliminating all doubtful cases there remain numerous instances in which the infection was undoubtedly acquired in Calcutta, many of the patients never having been away from the neighbourhood of Bow Bazar all their lives

There was one case where there was strong presumptive evidence that the infection had been brought into a house in Bow Bazar by two pilgrims who returned from a tour round India, suffering from an intense malaria About a month after their return, two members of the family occupying the same building were seized with malaria, numerous malignant tertian parasites being found in their blood I may mention

* A paper read at the Medical Section of the Asiatic Society of Bengal, November, 1906

for what it is worth that the house was infested by mosquitoes, owing to the proximity of a tank

The distribution of the cases according to whether the infection was contracted in Calcutta or in the mofussal, is shown in the following table —

Table showing the Probable Place of Origin of the Infection

	Calcutta and Suburbs	Mofussal
Malignant Tertian	97	93
Benign Tertian	61	52
Quartan	7	30
Total	165	175

Among 301 consecutive cases the following kinds of parasites were found

Malignant Tertian only	163 *
Benign Tertian only	100
Quartan only	25
Mixed Malignant and Benign Tertian	10
Mixed Benign Tertian and Quartan	2
Mixed Malignant Tertian and Quartan	1

TOTAL 301

The duration of the fever is stated by the patient as —

	1—13 days	14—29 days	30—days months	Over months	TOTAL
Malignant Tertian	103	23	29	8	163
Benign Tertian	63	10	20	7	100
Quartan	7	4	5	9	25

The Quartan shows the greatest proportion of prolonged cases, while the Malignant Tertian shows the least tendency to chronicity

The type of fever according to the history given by the patient was as follows —

	Intermittent	Remittent	Continued
Malignant Tertian	126	23	14
Benign Tertian	92	4	4
Quartan	23	2	0

The periodicity was stated by the patients to be—

	Quotidian	Tertian	Quartan	Irregular	TOTAL
Malignant Tertian	100	18	Nil	5	123
Benign Tertian	60	22	Nil	3	85
Quartan	9	1	13	2	25

It will be seen that the Malignant Tertian was rarely a true tertian fever, and the patient's statements regarding this are borne out by Hospital experience, so that it would appear that the type of fever commonly seen in Malignant Tertian Infections is essentially Quotidian

To a slightly less degree the same remark applies to Benign Tertian, while Quartan alone, appears to be true to its name in the majority of cases

* Rings only 105 Rings and Crescents 48 Crescents only 10

The presence or absence of Rigors with the onset of the fever and of Sweating with the termination are shown below —

	RIGORS OR SHIVERING		SWEATING	
	Present	Absent	Present	Absent
Malignant Tertian	135	28	108	55
Benign Tertian	90	10	70	30
Quartan	23		18	7

The degree of enlargement of the Spleen was —

	Spleen not enlarged	Palpable	Two fingers below Costal margin	To Umbilicus	Um Below bilicus
Malignant Tertian	104	28	24	6	1
Benign Tertian	57	24	16	3	0
Quartan	10	3	8	4	0

The size of the spleen bears a close relationship to the chronicity of the case, and, as a general rule, it may be stated that in recent infections there is rarely any marked degree of enlargement of the spleen while in chronic infections the spleen is moderately enlarged

The liver was enlarged in a fair number of cases—

	Liver enlarged	Liver not enlarged
Malignant Tertian	29	134
Benign Tertian	17	85
Quartan	4	21

In many cases there was a history of preceding attacks, in Benign Tertian and Malignant Tertian these tended to last for a week or ten days with several days freedom from fever between the attacks, but in Quartan the fever seemed as a rule to go on continuously for long periods without interruption —

	Previous Attacks during preceding six months	No Previous attacks during preceding six months
Malignant Tertian	43	120
Benign Tertian	25	75
Quartan	5	20

The condition of the bowels as stated by the patient was as follows —

	Regular	Constipation	Diarrhoea	Irregular	Dysentery
Malignant Tertian	35	92	12	14	5
Benign Tertian	34	42	6	11	0
Quartan	9	8	2	5	1

The prevailing condition, as in most febrile conditions was constipation, but diarrhoea and dysentery were not uncommon, and in hospital practice they were some times found to be troublesome and even dangerous complications

Table showing roughly the number of parasites found —

	Very few	Few	Fairly numerous	Numerous	Very numerous
Malignant Tertian	5	38	74	32	1
Benign Tertian	4	21	54	20	1
Quartan	2	7	14	1	1

The number of parasites found is roughly indicated, no attempt being made to fix any definite standard, but the value of the table is in showing that the parasites were rarely exceedingly few, so that there is not much likelihood of an infection of importance being overlooked even if the time spent on the examination is limited. The other sources of error are much more numerous, such as imperfect staining and the mistaking of artefacts for parasites, in the former case parasites may be overlooked even when present in large numbers, and in the latter they will be supposed to occur in cases where none exist.

There was generally a close relation between the number of parasites and the severity of the fever, and when a large number of ring parasites is found the treatment should in all cases be prompt and vigorous, indeed Major Rogers insists that these cases are likely to develop into cerebral malaria at any moment, and he recommends intravenous injections of quinine when a considerable number of rings occur in each field. I have only seen one case where cerebral symptoms occurred after the commencement of treatment, and that was in a case where the patient appeared to be in a good condition, but showed a large number of rings, he was at once given 20 grains of quinine in solution, by the mouth, but a few hours after, without any warning, he became rapidly comatose and died in about four hours.

An exception to the rule stated above was seen recently in the case of a child who was admitted with comparatively slight fever, the temperature only reaching 100° for a few hours daily, though her blood was found to contain enormous numbers of benign tertian parasites, the patient yielded promptly to quinine and never showed a symptom to indicate that there was a specially rich infection.

The general condition of the patients is roughly shown in table

Condition of the Patient

	Health good No marked anæmia	Health fair Moderate anæmia	Health bad Marked anæmia
Malignant tertian	19	122	22
Benign tertian	20	65	15
Quartan	1	16	8

The hour of onset of the fever was remarkably uniformly in the forenoon or early afternoon, though cases occurred where the onset was in the evening or at night.

Jaundice was fairly common especially in the cases where there was bilious vomiting. Intense jaundice was seen once or twice, probably due to an associated catarrh of the duodenum and bile ducts.

Pains in the back and joints were common, these were sometimes so severe as to suggest "Dengue" or "Seven-day Fever."

Only one patient gave a history of a double intermittent fever, and he turned out to be a mixed infection (malignant and benign tertian), apart from this there was nothing in the history of the mixed infections

which would have enabled one to suspect their existence. The routine treatment in the Out-Patient Department consisted of quinine sulphate in doses of ten grains or of cinchona febrifuge in doses of twelve grains in acid solution twice daily, and one or more drachms of sulphate of magnesia was added to each dose in cases where there was constipation.

This treatment was carried out at once in all cases where there was a reasonable suspicion of the presence of malaria, without waiting for the result of the blood examination, as it was felt that the harm likely to result from the administration of quinine in non-malarial cases was infinitely less than that which would follow if even a few serious cases of malaria were allowed to go without the drug.

The following points are the result of experience gained by watching the result of treatment in the cases which were admitted into the hospital.

In malaria quinine in doses of 20 to 30 grains daily in acid solution, unless vomited, brought the temperature to normal within two days in the majority of the cases, a few cases kept up for three days, but only one or two for four days. In the few cases in which the fever went on for more than four days there was some complication such as typhoid or phthisis, or the drug had not been given in full doses.

It must be remembered in private practice that it is not unknown for patients to consign their medicine "to the dogs" especially when it is so nasty as quinine, so that in any case where the temperature appears to be slow in yielding it is a wise precaution to find some excuse for seeing the patient take the dose in one's presence.

In the case of institutions where large quantities of such a saleable drug as quinine are dealt with it is necessary to keep a close check on the stock mixtures, and where the drug is given prophylactically the results will often be found to improve marvellously if the acid solution is made up and administered in one's presence.

Cinchona febrifuge was used in a considerable number of cases in slightly larger doses than quinine and it was found that the results were almost as good, the only difference noticed being a slightly greater tendency to nausea and vomiting.

Cinchona is much cheaper than quinine, so that in cases where cost is a primary consideration it may be useful to know that the cheaper drug is practically as effective as the more expensive.

Quinine was not often given hypodermically, and in the cases where this method of administration was rendered necessary owing to the drug being rejected when given by the mouth, the results were not in accordance with the generally accepted teaching on the subject.

It was found that the temperature on the average took about twelve hours longer in coming to normal than when the drug was given by the mouth, although the highly soluble bihydrochloride was used in doses of ten grains, so that it appears that the absorption is slower from the subcutaneous connective tissue than from the mucous membrane of the stomach.

Kleine's discovery that quinine is excreted (and therefore presumably absorbed) much more slowly when given hypodermically than when given by the mouth, and the common experience that the physiological effects of quinine are not so marked after a hypodermic injection, point in the same direction, and it would be of interest to carry out a series of experiments on this most important point, but in the meantime, the experience at the Medical College Hospital is, that there is no more satisfactory method of giving quinine than in acid solution by the mouth, and that it is rarely necessary to resort to hypodermic administration.

In one case where cerebral symptoms were threatening, quinine was given in a dose of 20 grains by the mouth, and as it was considered very important to ensure the rapid action of the drug, 10 grains were also given hypodermically, in this case the results were most satisfactory, and it may be worth considering whether it would not be a good routine in all cases of considerable severity to combine the two methods, so that in case the patient should reject the quinine, there may be no loss of time in commencing the hypodermic administration. Pills and tabloids are most treacherous; they are not infrequently passed in the stool, and even powders are not quite certain in their action unless they are followed by an acid draught sufficient to dissolve the quinine in the stomach.

Intravenous injection was used in three cases of cerebral malaria with marked coma, but none of them recovered, indeed we have had no case of recovery after the appearance of coma, but the number of cases seen was too small to generalize from.

No harm was ever seen to result from giving quinine at once, even when the temperature was high, and when one considers the possibility of cerebral symptoms appearing at any time in serious infection, the risk of delaying is a serious one to assume, while on the other hand the only harm that can be done by giving the drug while the fever is still high, is an aggravation of the patient's discomfort. In the absence of information as to the period that ensues between the administration of quinine and its presence in maximum amount in the circulation, it hardly seems to be worth while to attempt to give the drug at any definite stage in the development of the parasite, and it seems unlikely that any better result could have been obtained by any method of this kind than those seen from the prompt commencement of the treatment irrespective of the phase of the parasites.

Besides, it is quite exceptional to find any marked degree of regularity in the spoolution of the parasites except in the case of quartan infections, so that it seems better to adopt the simple and safe rule of giving quinine at once irrespective of temperature.

Children bear the drug well, and require larger doses than are usually given: a child of ten years will bear practically an adult dose, a child of five will take five grains twice daily, and a child of one year old can take three grains twice daily without risk.

In pregnancy, it is essential to make sure of the diagnosis, so as to avoid the risk of doing harm by the needless administration of quinine, but when there is no doubt as to the presence of malaria, there is certainly less risk from the proper administration of quinine than from allowing the fever to go on. If the patient is kept at rest in bed, five grains thrice daily can be taken without appreciable risk and with the greatest benefit in the vast majority of the cases.

No difference was noticed between Europeans and Indians in susceptibility to quinine, but the latter, especially the highly educated are more alarmed by the physiological effects, and if they are not warned beforehand of the likelihood of unpleasant symptoms, they are very liable to think that they are being badly treated.

It is most unfortunate that the false suggestions as to the evil effects of quinine have taken such a hold of the Indian people, that not one in twenty even of the European trained doctors venture to prescribe the drug in sufficient doses.

Quinine should be kept up in full doses for about a fortnight after the fever has ceased, and then it should be continued in doses of ten grains twice daily on two consecutive days in each week. If the drug is stopped even after two or three weeks of thorough treatment, relapses are the rule, and it is generally only after the occurrence of the relapse that the average hospital patient begins to take seriously the advice to continue the use of the quinine.

No ill-effects from the use of quinine in malarial cases were seen at the College Hospital, and no cases of idiosyncrasy to the drug were seen except in two cases of non-malarial fever in which a certain amount of

collapse occurred which might have been due to the drug.

It may be taken as a rule with practically no exceptions that when quinine is needed, it may be given with the greatest confidence and with perfect safety, and that the cases in which bad effects are noticed are nearly always those in which the drug was not required.

With regard to the outfit required for blood examination, there is a general impression that it is very costly, but the advances that have been made of late years in the construction of oil immersion lenses have brought these within the reach of every one, and a complete equipment for blood examination can now be had for two hundred rupees. The following specification may be taken as an example—Leitz Microscope IIb with a No 3 and a 1-10th oil immersion objective, two eyepieces and a simple substage condenser, costs about £9 10 in England, and if properly used, it will show clearly any malarial parasite, and is sufficient for all ordinary bacteriological work.

The stands of Beck, Watson, Swift and other English makers are quite as cheap as those of Leitz and are in no way inferior, but the lenses made in England (up till quite recently at all events), are not equal in value to those of Zeiss, Leitz and Reichert, so that as any maker's lenses will fit on any stand, an English stand and continental lenses probably constitute the best combination.

For a complete account of malarial fever in Europeans in Calcutta, reference may be made to the very full and clear account by Major Rogers in the *Indian Medical Gazette* for March, 1906. I must express my indebtedness to Major Rogers for much help in my work, and for his kindness in bestowing on me the "freedom" of his laboratory.

LEISHMAN-DONOVAN INFECTION IN A GURKHA

By T. A. GRANGER,

MAJOR, I. M. S.

Abbottabad

THE following notes and temperature chart of a case of tropical spleno-megaly associated with the presence of Leishman-Donovan bodies are sent on account of the interest attaching to the distribution of this infection at present. The patient is a Gurkha soldier, aged 18 years, who was enlisted at Gorakhpur on 15th March 1905. He arrived at Abbottabad on the 5th April 1905. His spleen was not perceptibly enlarged, and he remained apparently quite healthy except for three days' fever in June 1905 until at Hassanabdal on manoeuvres on the 19th March 1906 he developed pneumonia. He recovered from the pneumonia, but the spleen which had been discovered to be enlarged at the commencement of the illness, increased in size and the liver also became enlarged. The case then progressed as stated in the following notes.

In July 1905 the man went for eight days up to a hill camp above Abbottabad and for fourteen days in November and December 1905 he was on the Rawalpindi manoeuvres. For the rest of his service he had not left Abbottabad until he proceeded on the Hassanabdal manoeuvres. I have not seen any cases of tropical spleno-megaly in this district, and the interest of the case consists in the fact that the

disease was evidently contracted in Nepal or in the Nepal Terai and remained latent for over a year until the patient was weakened by an attack of pneumonia.

13th May, 1906—This patient was admitted on 19th March 1906, suffering from fever, cough and headache. The fever continued, ranging between 100° F and 103.4° F. On the 21st, 23rd and 26th March examinations showed no physical signs of pneumonia. On the 26th March a sample of blood was sent for examination. On the 28th March a patch of consolidation was detected at the base of the right lung, on admission the spleen was found to extend three inches below the costal margin. The temperature steadily fell from the 27th March until on the 1st April it reached normal. On that date Widal's reaction was reported to be negative 1 in 40. From the 1st April patient's temperature remained normal till the 1st May when it rose to 101° F. In the meantime the right lung had completely cleared up.

Since the 1st May the patient has had irregular fever, usually intermittent rising to 101 or 102° F in the evening and being about 97° F in the morning. On the 3rd May a course of quinine in gramme doses according to Koch's method was begun and completed to day. It has had no effect at all on the fever, and the patient, though professing himself well, is becoming more anæmic and the enlargement of the spleen has increased.

3rd June 1906—Since last entry the fever has not been so severe. Some days being normal or practically normal and never rising above 100° F. He has been given a tonic mixture of quinine, iron and arsenic and milk and mutton added to his diet. He has no cough and no complaint except that he gets fever. The spleen now extends an inch below the level of the navel and two inches to the right of the navel. It is indurated and the splenic notch well defined. Careful microscopic examination of the blood has failed to show malarial parasites. The liver also is enlarged, extending 1½ in below the costal margin in the mammary line.

8th July 1906—Patient's condition remained the same, and on 29th June 1906, a sample of his blood was despatched to the Sanitary Officer to be tested for the micrococcus melitensis. To day it is reported to be negative 1 in 40. The temperature is intermittent, ranging from 97° F to 100.5° F. A course of arsenic in increasing doses has been commenced.

23rd July 1906—After continuing the arsenic for ten days, giving in the end seven minims of Liquor Arsenicalis thrice daily, it was found to have no effect on the temperature and was stopped, and iron and quinine re-commenced. The temperature remains as in last note except that it is slightly higher in the evenings. Patient's general condition unchanged. There appears to be more pigmentation of the skin than is usual even in sick Gurkhas.

2nd August 1906—A course of eight days' intra muscular injection of 5 grains hydrochlorate of quinine daily has had no beneficial effect whatever.

27th August 1906—Patient's temperature varies between 100.2° F in the evening and 97° F in the morning. Microscopic examination of the fæces by Lieut R. T. Wells, I.M.S., shows the presence of a fair number of the eggs of trichocephalus dispar. The patient has been put on fluid diet. Blood count=3,750, white cells in a cubic millimetre.

31st August 1906—On the 29th August 90 grains of thymol were given and produced severe diarrhoea. No trichocephalus dispar was found in the fæces. The purgation left the patient very weak.

17th September 1906—The permission of the patient and his Commanding Officer having been obtained, a splenic puncture was made with an antivenene syringe on 15th September 1906 and several films made. Lieut R. T. Wells, I.M.S., stained a film with Jenner's stain, and the Leishman-Donovan body was discovered and two

films sent to the Sanitary Officer, Northern Command, for confirmation.

On the evening of the 15th August two motions were passed containing blood and mucus, and the temperature went up to 102° F. Yesterday there were two motions, one of which contained a drop of blood. There are no signs of peritonitis and there is now no pain. It is difficult to believe that the syringe penetrated the stomach or intestine as the spleen is very much enlarged. The puncture was made just below the costal margin and the needle is only 1½ in long. The full length of the needle was inserted.

22nd September 1906—The temperature became normal on the evening of the 17th September and has remained normal since that date and no blood or mucus has been passed since last entry.

There is now no swelling pain or tenderness at the seat of the splenic puncture.

27th September 1906—Patient who has been put on small doses of strychnine remains *in statu quo*. The Sanitary Officer, N.C., reports that he has discovered in the films sent to him "bodies similar to Leishman Donovan bodies which with clinical history render it probable they are such."

A Mirror of Hospital Practice

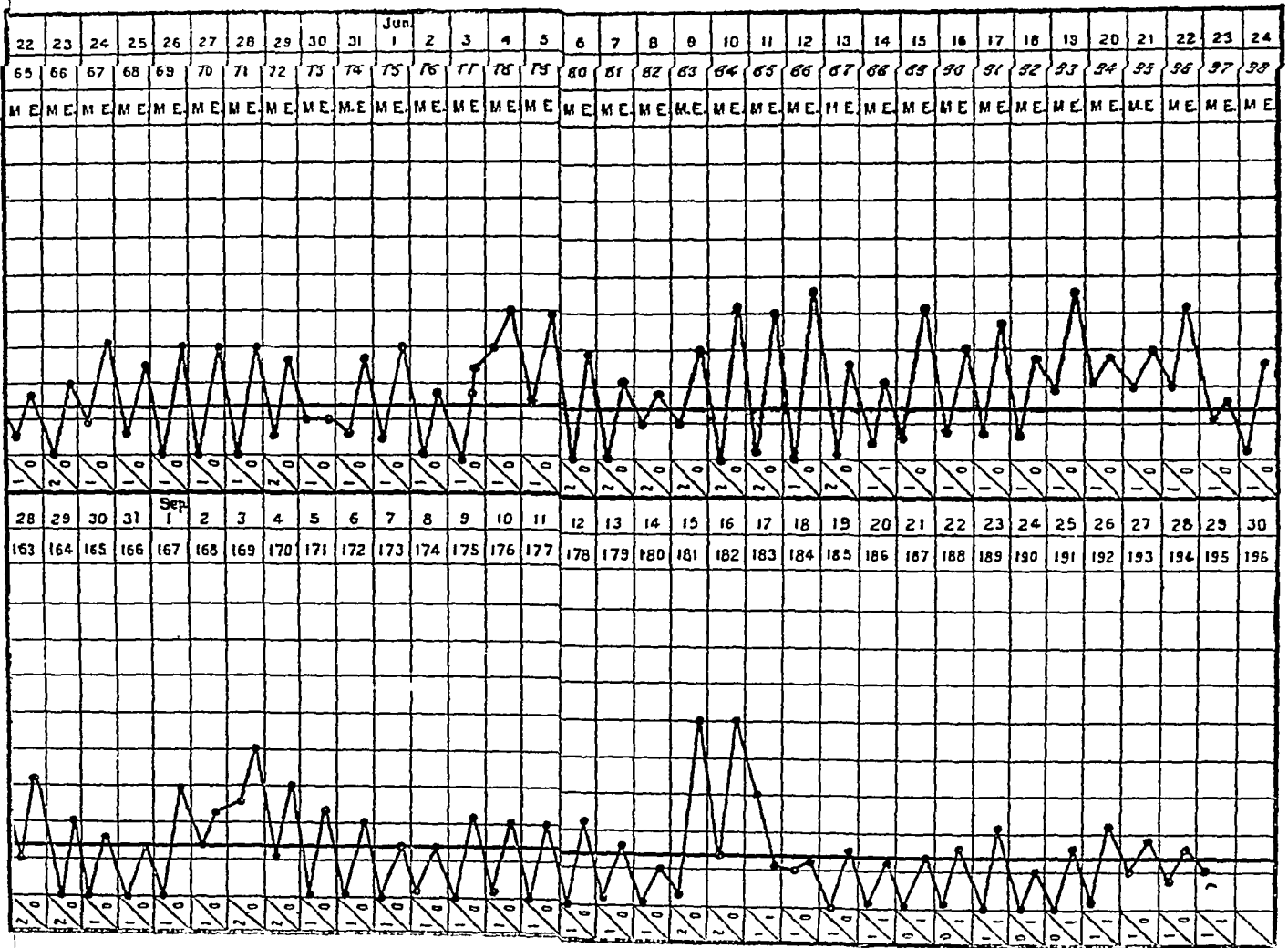
HEPATIC ABSCESS, AND SOME POINTS IN THE DIAGNOSIS OF MULTIPLE HEPATIC ABSCESS *

BY G. G. GIFFARD,

MAJOR, I.M.S.

HEPATIC abscess, to us practitioners in India, must always be one of the most interesting diseases, and to the patient one of the most grave, and it is with the view of attempting to use the collective experience and knowledge of the members of this Branch that I have ventured to open this discussion and to produce the notes of only six cases. These six cases, however, seem to me to be of very considerable interest, and help to illustrate the value of the diagnostic points usually brought forward in the elucidation of the one most important problem that every case of hepatic abscess presents. I suppose all here will agree with me that there are clinically two distinct kinds of hepatic abscess, one of which used to pass, in the schools, under the name of single tropical, and the other multiple septic, or dysenteric. Of the former it was held that, given good drainage, recovery might be confidently expected, and of the other variety it was equally maintained that death must result. I am now almost beginning to doubt whether this is absolutely true. Nevertheless I think we can state that multiple abscess is quite usually fatal, and single abscess cases usually recover. I know that after having served 12 years, on and off, in the General Hospital, and after having seen the practice and heard the advice of Browne, Price, Matland, Grant and J. Smyth, I have come to

* Paper read at Madras Branch of Brit. Med. Assoc.



look with pity and a feeling of helpless inability to relieve, on those patients suffering from hepatic abscess whom I have reason to believe are the subjects of multiple hepatic abscess. The six cases that I now propose to quote to you have given me much to think about, and have begun to shake my opinion as to the *possibility* of making a correct diagnosis, or rather the possibility of making a correct prognosis.

The diagnostic points that I propose, briefly, to discuss in their reference to the differential diagnosis of multiple and single hepatic abscess are—

Before operation

- 1, The history of dysentery, alcohol, malaria and exposure
- 2 The manner of the onset of the disease
- 3 The temperature before operation
- 4 Shape and size of the liver and the situation of the abscess

After operation

- 5 The fall of temperature after operation
- 6 Septic look, condition, sweats and typhoid state
- 7 Nature of the pus and discharge

I will now give you a short résumé of each case.

First case—This was a young European Assistant Surgeon, whose previous medical history had been uneventful, with the exception of a tendency, when a medical student some 8 years ago, to consolidation of the apex of the left lung. The beginning of his illness had been the occurrence of a mild dysentery. He came into hospital early, and the signs and symptoms of hepatic disease were almost absent. For about a month however the temperature was always 100 to 101 and the liver very slowly enlarged without tenderness and without any affection of the pleura. The signs were as yet indefinite and were practically limited to these—

- 1 General hepatic enlargement
- 2 Diminution of air entry at the base of the right lung

- 3 A progressive anæmia
- 4 A tongue which slowly became more and more coated. It was considered advisable to make exploratory punctures. Under an anæsthetic the first puncture was made in the posterior axillary line well up towards the top of the right lobe of the liver. Pus was found at once and the ordinary operation with excision of 2 ins of 2 ribs performed. The patient was quite comfortable after the operation and for a few days seemed likely to make a good recovery, but his temperature was unsteady. At the end of the first week after operation it was obvious that instead of progressing towards recovery he was slowly drifting into a septic and cachectic condition. The wound was again opened up under chloroform and a second abscess filled with thick, dark material, half pus and half broken down liver substance, was evacuated. This operation did the patient no good, the wound assumed a filthy condition, the discharge almost ceased, the temperature became markedly irregular and the patient rapidly wasted away. The exacerbation of the temperature being accompanied by severe sweats. He died suddenly, after remarking that something seemed to have given way in his inside.

Second case—This patient was an Englishman, 38 years of age, who had been in India some 16 years, the early period of his service had been spent in Assam

where he had suffered, 14 years ago, from occasional very severe but short bouts of ague. He said that he had not had ague again for many years. He was sent to Madras from S Arcot district in a more or less convalescent state, because of a fever that had proved intractable. His illness had begun with a fortnight of severe dysentery, during which he had lost much weight. The fever and pain in the right side were of one week's duration. He had always been a very temperate man. When I first saw him, his temperature was 100, but ran up that afternoon to 103. He was very pale, very tired after his railway journey, and was still troubled by a dysentery of a not very active nature. The patient, however, looked very ill indeed, his tongue was dry, heavily coated, his pulse rapid, sudden and feeble, and there was a distinct yellow, if not actual jaundice, tint of the skin. He looked *septic*, if I may use such an expression. That afternoon, and every afternoon for the next week, his body was shaken for an hour or more by a most violent rigor (of the kind I have not seen since I left Burma), and this was followed by drenching sweats which were I think the most severe I had ever seen, and it required the most careful nursing, brandy, strychnine, hot water bottles, etc., to keep him alive. At this time the lower edge of his liver was so tender that the slightest palpation was unbearably painful. I had little hesitation in telling his friends that he was suffering from a fatal kind of hepatic abscess, meaning the septic and dysenteric kind. The liver enlargement slowly increased, and Major Donovan's examination of the blood gave a marked polymorpholeucocytosis. At this stage I would, in the ordinary course, have explored his liver, especially as a slight cough now appeared and there was distinct friction to be heard over the base of the right lung. Colonel Browning saw the case with me and we came to the conclusion that he was too ill to stand any kind of operation. By the end of the next five days the patient had somewhat rallied, and the rigors had entirely ceased, although the liver had still further enlarged, and the basal pleurisy was more marked. To make a long story short, he was aspirated deeply in five different places, and although soft spots were encountered in two or three places in the right lobe, pus was not found, and the operation resulted in the aspiration of some ounces of black blood. His recovery was immediate, uninterrupted and much more obvious in the aspect of the patient than in the temperature chart, as the pleurisy on the right side continued for some time. Here, then, was a patient obviously septic, almost moribund, jaundiced, dysenteric, and wasting rapidly, with universal enlargement of the liver and, as far as I can tell, *no abscess* at all, either single or multiple.

Third case—A handsome young athlete, one of Sandow's troupe, who had been told 18 months previously by a doctor in Johannesburg that he had an abscess of the liver and had better go into hospital, but as he did not believe this and was busy, he pushed along all right for about a year. He was then in a mounted corps. He joined Sandow and came to India, but he felt so generally slack and unfit that he was not able to continue to take part in the pupils' show, and was allowed to take the part of instructor. He, however, soon found even this too much, and noticing now that he was rapidly losing weight, he came to the General Hospital. The first glance at him as he stood in the office suggested liver. Pale, thin, with a glassy eye, his collar obviously too big, the clothes of a larger man hanging loosely about him, skin distinctly yellow but conjunctivæ not jaundiced, and a dirty door mat tongue. Having come only for advice on account of shortness of breath, he was surprised to find himself ordered at once into bed, as he looked so utterly unfit to be up and about masquerading as an athlete and showman. He gave a history of African dysentery two years ago, and pain in the right side and shoulder for over a year. He was found to be suffering from the symptoms, and he presented the obvious physical signs of a large abscess.

of the right lobe. He was not operated on for several days, because he began to pick up in strength by simply lying in hospital and because I was suffering from a bad finger at the time. Colonel Browning kindly did the operation, which proved to be an easy one. The temperature at once fell to normal, but the pain over the liver and tenderness were aggravated to an extraordinary degree and when ten days afterwards the temperature assumed a decidedly septic appearance and the patient's tongue became dry, coated and brown, I again pointed out to my assistant and students that such a history of dysentery and exposure followed by great and universal hepatic tenderness and marked wasting, with a brown, furred tongue, meant only one thing—multiple abscess. Once more I was off the line, and the administration of a brisk purgative, suggested by my very astute assistant, Mr V. Rao, resulted, as you see in the chart, in a steady fall of temperature and ultimate complete recovery. I can assure you that on June 5th, 6th, and 7th, he was sinking and septic case. He made an uninterrupted recovery, with the single exception of a rise in temperature on July 4th, 5th, 6th, 7th. This rise was easily ascertained to be due to some retention of pus, and the dilatation of the orifice of the sinus, at Colonel Browning's suggestions, with Hegar's dilators at once put things right. He left hospital well and strong. The bare record of the facts gives but a poor impression of his state after the operation, and of the general appearance that made me almost certain that this was a case of multiple abscess.

Fourth case—A very fat and florid European, Sergeant of Volunteers, was admitted on 2nd July 1905 with this history—That he had an attack of dysentery that lasted for a fortnight in May 1905. That on 19th June, 1905, after a certain amount of good living, on his return to his station by train, he got a bad cold and chill, which kept him in bed, with pain in the right side and right shoulder, and a temperature of 102. These symptoms grew worse daily, and he came to the General Hospital. He admitted that he was a moderate indulger in alcohol, and an uncharitable person might have said that he looked it. An abscess of the right lobe was more or less staring one in the face, with right basal pleural friction, enlargement upwards, and general enlargement of the liver, jaundice, oedema of the skin over the lower ribs on right side, foul tongue, fever, etc.

The operation was easy, and as an operation successful. He was not in the least relieved by the operation. He felt no better, as he looked well all along and said that he felt well, but his temperature remained high, and indeed steadily rose, there was very little discharge, and what there was, was of the prune juice variety, rather than yellow pus.

As the liver became no smaller, I thought that this was a simple abscess draining badly. I put my finger deeply into the wound under CHECL3 on the 11th day and also a probe and sinus forceps, but struck nothing further. The patient now began to emaciate in a way I can only compare to that of a horse suffering from surra, and on the 15th day he became markedly weaker and his temperature fell to almost normal. This time, however, I was not deceived. There was no corresponding improvement in the man. He died suddenly on the 23rd day, with a normal temperature, and his liver consisted of more multiple abscess than of liver tissue.

Fifth case—A poor, thin Eurasian—one of the most sickly, whining, and hysterical degenerates that ever came to hospital. Has had dysentery lasting a month no less than three times during the last five years. The first dysenteric attack was followed by pain, swelling, etc., on the right side, and Colonel Martland operated on an abscess five years ago on the right side. The scar is still very clearly seen. The pain of this attack is confined to the pit of the stomach and the edge of the liver in the left lobe. The pain radiates up

into the left side and any attempt at a deep breath seems to cause intolerable pain. The patient is very highly neurotic, and weeps and laughs through his tears in quite a female way. He had been in hospital about a month previously, but no certain diagnosis had been made, as there was only pain and no enlargement of the liver.

I opened an abscess almost exactly below the ensiform cartilage, and the patient, who wept and trembled until under the anæsthetic, stood the operation badly and was no better, and, indeed, in two days' time considerably worse. I noticed about the 6th day after the operation that the discharge was no longer purulent, but was almost entirely pure bile, and that fragments of bile-stained, gummatous material issued when the wound was irrigated. He was therefore given large doses of Pot Iod and forthwith began to recover. The discharge became typically gummy and more of the pieces of breaking down (gummatous) liver came away. The patient made good, if slow, recovery, interrupted by an attack of cholera that nearly finished him off. Had he not had iodide, I feel certain he would have died, and the temperature have remained much as it was in the first week after operation. I assure you, Mr President, that until this year I thought it was possible to make a fairly accurate estimate of a man's chances of recovery after the operation for hepatic abscess. If these five cases shook my belief, the sixth, to use an American expression, fairly broke me up.

Sixth case—The sixth case was that of an hospital assistant who had suffered many things in his comparatively short career. Some of you may remember that he came here, and I showed him to you last meeting. He admitted to recent syphilis, considerable drunkenness, dismissal and reinstatement in Government service, with the attendant mental worry of such proceedings, to bad malarial fever, to bad dysentery and to poor living. He looked, on admission, a dying man, and there was a large abscess bulging and pointing in the mid axillary line between his 9th, 10th and 11th ribs. He was so weak and ill that I only half gave him chloroform, preceding the operation by a hypodermic injection of 10m of strychnine, and making one large slash straight through everything, chopped out a piece of rib, rolled him over and wondered if it would kill him. The pus was not measured, but it poured out over everything. In doing this rapid operation I pushed two fingers into the cavity, to allow the pus to escape slowly, and to feel the extent and character of the whole in the liver. [Next day I had red lines all up my forearm and a temperature of 103. It was now my turn for a little knife and carbolic acid from the friendly and willing hands of my colleague, Captain Niblock.] The continued foul tongue and jaundiced aspect of the patient, and the ragged loculated condition of the hole in the liver, decided me that it must be a case of septic and multiple hepatic abscess. He did very well for the first two days, except that the discharge was of the prune juice and broken down liver type, and not yellow pus. By five days after the operation he was as bad as ever, and there was no discharge worth speaking of. He was again put on the table, one more rib resected, and a fresh large abscess opened. He now improved steadily, but slowly, but his tongue never was right and he still continued emaciate. Some eight days after the operation, the temperature, friction dullness, and eventually crepitations with rapid breathing and a good deal of pain on the right side, proclaimed a pneumonia and pleurisy of the base of the right lung. Treated as for an ordinary lobar pneumonia, he again decidedly improved, and until some five days before his next and third operation he seemed about to recover. Then he suddenly became worse, and a further examination of the chest revealed a large accumulation of fluid. Once more on to the table, once more a rapid operation, once more a pint of pus, this time in the pleura. Collapsed, complaining of great thirst, and with very rapid pulse and subnormal temperature, for two days he hovered

between life and death, but as he again somewhat rallied, the wound became septic and grey sloughs began to form all around the two large holes in his side. The discharge became small in quantity and disgusting to see and smell, in fact, in the language of the ancients, a bloody and foetid ichor. The ribs stuck out necrotic in the everted grey and sloughy wound. I told my assistant to give him as much morphia as was necessary to help the poor fellow, who now knew that he was dying, out of this world. Mr V R and an enthusiastic student, however, did not entirely lose hope, and to make a long story short, constant and assiduous attention to the irrigation and clearing of the wound pulled him through. I had only twice before seen such a wound of the liver in such a state and had always believed such cases hopeless. The patient is, however, alive and well and daily growing stronger. He now also, I believe, is a testotaller.

Mr President, I have selected these six cases, as you are aware, to stimulate discussion, and I hope some more experienced or more observant of our members may be able to tell us if there is any way, or point out the likelihood of a way being eventually found, to enable the medical attendant to form a clear opinion as to the nature of the disease in abscess of the liver.

DISCUSSION

Lieut-Col Browning remarked that the differential diagnosis as between single and multiple abscess was, before operation, beset with difficulties, and it is only to tropical experience and tropical investigation that we can look for help.

Men practising in temperate climates see hepatic abscess practically in one form.

A man leaves the East with hepatitis. In a very large number of cases he is quite well before reaching Europe, or if he has already developed a moderate sized abscess, it may, as I pointed out on a previous occasion, become quiescent, or, as is very much more frequently the case, it develops slowly without much constitutional disturbance. Adhesions form, and when he appears before a Surgeon in England, there is a distinct visible tumour, which can be explored with a hypodermic needle and operated on without any difficulty. How different such a case is to the not uncommon type one sees out here, where there is no local tumour, there are present acute hepatitis, high fever, etc., and one has to explore the probable areas, and when one operates, it is mostly through a healthy pleura and on to a liver with no adhesions, through a congested and highly vascular organ, to an abscess situated in the substance of the liver.

The diagnosis of multiple abscess before operations is, in our present state of knowledge, impossible. Subsequent to operation, the presence of other abscesses may be fairly surmised—continuance of fever, non-decrease in hepatic area, state of the tongue, sweats and general loss of weight, all point to this, but as Major Giffard infers, are not to be absolutely

relied on. We must look to our physicians for more help regarding the question of leucocytosis. Is there a progressive decrease after operation, or does the blood count show a steady relative increase day by day?—these are points we require more information on.

Words can hardly express how profoundly ill case X mentioned by Major Giffard was, and his rapid improvement after simple exploration was very remarkable, but as is well known, this improvement in symptoms under such circumstances is a matter of common experience. I well recollect Maclean pointing it out to us 25 years ago.

Major Crawford said the subject of suppuration in the liver was one they were all more or less practically familiar with, but that long ago he felt the futility of attempting to distinguish between single and multiple abscesses, and the more cases the Surgeon saw and operated on, even after the most elaborate care in watching the symptoms beforehand, the greater was his caution in attempting the differential diagnosis. He felt sure that in spite of either difficulty or doubt the Surgeon's duty was to cut when he was convinced that pus was awaiting evacuation, irrespective of all other considerations, even though he might reasonably anticipate the subsequent revealing of multiple abscesses in the organ. The blood count question was useful in combination with clinical symptoms, and if pointing in the direction of suppuration, should guide the Surgeon's line of conduct. The existence of leucocytosis did not, in Major Crawford's opinion, point absolutely to actual suppuration, he considered that where pyogenic organisms were present prior to the suppuration stage, phagocytosis might reasonably be presumed to deal effectually in some cases with the inroad of such organisms, and prevent actual breaking down of tissue which is the essential element in suppuration. Only in this way could some cases be explained, where all the clinical signs point to the presence of suppuration and the blood count verifies this diagnosis, but where the tumour in question within a few days loses all its seriousness, symptoms subside and the patient is soon out of danger. He gave, as instances, some cases of appendicular trouble presenting all the symptoms of septic poisoning and local signs pointing to suppuration, yet they recovered without operation. Every surgeon in India must have had patients with similar histories. There will always be difficulty in diagnosing the presence of pus in these cases until the knife is used, although it would be perfectly justifiable to operate when the clinical and microscopical evidence both point to suppuration. As regards causation, infection of the liver, apart from pyæmia, was part of the general subject of intestinal infection and prevention must be carried out on these lines if it is to be effectual.

Capt. Niblock, I M S, said —

I have operated on 58 cases of liver abscess, of which 14 were multiple, *i.e.*, 1 in 4. This is, I believe, about the usual ratio in Madras.

In my opinion there are *three* varieties of *amœbic* abscess, *viz.*, *single* and *multiple* as usually described, and a third variety in which one large abscess is present together with several small ones. That this last variety begins as a single abscess, but that owing to delay in operating, unnecessary damage to the liver substance or abscess wall, or insufficient drainage after operation, other parts of the liver become secondarily affected. Thus I have seen several cases in which one abscess containing over 30 ounces (in one 87 ounces of pus was present in the liver) the rest of the liver tissue being studded with small abscesses, as verified by *post-mortem* examination. It is improbable that all these originated at the same time.

I agree with Major Giffard's statement that it is not possible to come to any definite conclusion, from the history or clinical appearances, as to whether an abscess is single or multiple. Even after operation the question cannot be decided with any degree of certainty. The following cases illustrate this —

Case I—T R, Eurasian, 43, was admitted to the General Hospital for hepatitis and bronchitis. There was a distinct history of dysentery, alcoholism, syphilis, malaria, &c. There was marked enlargement of the liver in all directions, especially downwards, the right lobe extending for about three fingers' breadth below the ribs. The left lobe was prominent. Exploration of the left lobe showed the presence of pus, and one abscess was evacuated containing 8 ounces of pus. As this did not seem sufficient to account for the enlargement, the right lobe was carefully explored, with the result that nothing but blood was drawn off. He was sent back to bed with a probable diagnosis of multiple abscesses of liver. His subsequent progress showed, however, that such was not the case, as he recovered rapidly without any further bad symptoms and left hospital apparently quite well.

Case II—C B, History of dysentery followed by hepatitis. After a few weeks' treatment for hepatitis, the left lobe became distinctly enlarged, the right slightly so.

An abscess, the size of an orange, in the left lobe was evacuated. The patient's temperature after this fell to normal and all pain disappeared. Nine days afterwards, when the abscess was almost healed, fever re-appeared, the temperature varying between 99.8 and 103. He again suffered from night sweats, frequently spat up small quantities of bright red blood, and friction sounds could be heard over the right lobe, which was not, however, appreciably enlarged.

After a few days of this, multiple abscesses in right lobe were suspected, and a thorough

exploration with the needle was carried out. No pus was discovered, and only a few ounces of blood were drawn off. His temperature, however, immediately fell to normal and never rose again, and all the other symptoms disappeared. Nine months afterwards I had a letter from him stating that he felt quite well and had just been examined by Surgeon-General Balfour, who told him that his liver was healthy.

The following case shows how misleading the history may be even when a patient is educated and has no desire to conceal anything —

Major —, R A, was admitted to the General Hospital for hepatic abscess. He stated that he was quite certain he had never suffered from dysentery. He died shortly after admission, and on *post-mortem* examination was found to have multiple liver abscesses, together with marked dysenteric ulceration in the large intestine. Many similar instances are known to me.

The history of alcoholism, although suggestive, does not assist one much, as I have seen cases both of single and multiple abscesses occur in persons who were total abstainers from alcohol.

The temperature is also an uncertain guide, as it may be normal where even large or multiple abscesses exist.

In one of the cases quoted by Major Giffard, marked improvement followed exploratory puncture. I personally know of over forty cases, in which an exactly similar result has taken place, and in such cases, *i.e.*, where no pus is discoverable, always make it a point to draw off several ounces of blood.

I wish to take exception to one statement made by Major Giffard, *viz.*, that hepatic abscess may be opened too soon. I do not think this is possible, but believe that an abscess should be opened as soon as discovered. In fact, unless this is done, it is impossible in many cases to tell how big the abscess may be. In 15 of my cases the abscess contained 10 ounces or under, all of these patients recovered. Out of the remaining 29 cases of single abscess, 9 died.

NOTE ON A POSSIBLE CASE OF MALTA FEVER

By A G NEWELL, M D, D P H,

Kurseong

As it is of importance to determine the questions of prevalence of Malta fever and degree of such in India, as well of the classes among whom it is possible to be met with, I give the following notes on a case which I was called into consultation at Kurseong in June 1903. The patient, a Bengali, was being attended by a

kobiraj I elicited the following history The patient went to the Delhi Durbar, on his return to his home in Calcutta, a few days after he felt feverish and fell ill with an "ague fit" and vomiting. He had had quinine for a long time without effect. Headache was present all along. Thirst was a prominent symptom and also perspiration. He had a little cough with expectoration of blood. On June 23rd, 1903, I found catarrhal condition of both lungs, larynx and pharynx. The spleen was very much enlarged indeed, protruding to the middle line, to umbilicus and downwards into left groin. The stomach was pressed to the right side and the liver dullness was very small. There was great tendency to emesis. The bowels were open daily. There was no joint pains and no rash. I decided to make a blood examination, but this idea the patient would not listen to, and I was never permitted, in consequence of raising this idea, to see the patient again. From all the circumstances of the case of which the temperature chart is very suggestive, I made the diagnosis of the case to be one of Malta fever. The kobiraj could not agree with me. I may add, that I have seen a large number of cases of Malta fever at the Military Hospital at Malta when temporarily at Malta. It is, of course, open to any one to question my diagnosis in the absence of a blood examination, and to say, it was a case of typhoid in a malarial subject, and I am open to arguments which can convince me of any other diagnosis in this case. It is to be remembered that at the Delhi Durbar the patient could possibly catch the infection from any infected person who came there at that time, that a long course of quinine had no effect on his temperature, that he had no diarrhoea or tenderness in right groin suggestive of enteric, that his temperature would have taken on an enteric character some time for so long an illness is unlikely to take such an irregular course, that his perspiration used to be profuse, that he had not the aspect of a case of enteric, and that except when feeling specially weak, or with a high temperature would sit up in bed in preference. The tendency to emesis is, of course, explained by the presence of the spleen in the stomach, and the slight catarrhal condition would not explain the temperature or the perspiration. Up to the 29th June, the patient's temperature was still hanging about 101° . I was told afterwards that a leading physician of the I.M.S. in Calcutta had also regarded the case as one of Malta fever.

OPERATIONS FOR EXTIRPATION OF THE SPLEEN

B. OWEN ST. J. MOSES, M.D., B.Sc., F.R.C.S., EDIN.,
F.R.S., EDIN.

Civil Surgeon, Dhubri

SLIPPING in the *British Medical Journal* of 30th June 1906, a notice of Latouche of Autun's

case on "Rupture of spleen: Splenectomy Recovery" taken from the *Bull. et Mém. de la Soc. de Chir. de Paris*, November 28th, 1905, I am tempted to refer to a case of mine which was published in the *Lancet* of January 27th, 1900, entitled "Excision of the spleen for injury." My patient was a well-built adult, 45 years of age, who was, in the course of a quarrel, struck with a sharp-edged weapon on the left hypochondriac region. The blow resulted in an incision through the whole thickness of the abdominal wall, two and a half inches long and three-quarters of an inch wide, the splenic capsule being at the same time incised for one and a half inches and the pulp of the organ projecting through the rent. The interval which elapsed between the time the wound was received and the patient admitted to hospital, amounted to several hours as the man had to be conveyed a considerable distance into town by the police. Apart from the differences in age and manner of occurrence of injury, there are several points in which the case reported by Latouche differed from that described by me. In my case the pulse was inclined to be feeble, the patient suffered from well-marked shock, there was no tympanic distension of the abdomen and no signs pointing to anything like rupture of intestine; the splenic lesion being manifest and the site of the injury corresponding with the region over which the blow was inflicted and not being on the opposite side of the abdomen. In the manipulations that followed in the management of the case, no difficulty arose in the way of escape of intestines and consequently none associated with the reducing of these. The method I adopted in dealing with the case in my charge and the reason for each step I took, have been carefully detailed in the published report alluded to.

The mortality following rupture of the spleen is undoubtedly very high as instanced by the cases quoted by Vulpian of Heidelberg which ended fatally. The mortality following operations for extirpation of the organ, that is splenectomy, also remains high, especially when done for leucocythæmia, chronic congestion, albuminoid degeneration and syphilitic enlargement. Indeed so much so is this the case that the method of dealing with such conditions by means of this operation has come to be regarded as unjustifiable. As I have stated elsewhere the results have been considerably better when the procedure was adopted for simple and malarial enlargement of the organ or for floating spleen. Where excision is undertaken for rupture, the mortality statistics quoted by Favier are sufficient to indicate the seriousness of the operation. There cannot be the slightest doubt regarding the correctness of the opinion of that surgeon as to early operation being a *sine qua non* of success. While on the question of the desirability of early operation, I may say that it is inconceivable that any but a very small

proportion indeed of cases of traumatic rupture of the spleen will recover with rest as the only treatment adopted, especially where the organ is already in an unhealthy condition as so frequently obtains in malarious countries. The dangers of delay in making a prompt and free incision are comparatively greater than any that are likely to arise in the course of, or after, operation in the hands of a surgeon who is at all accustomed to dealing practically with abdominal cases. Similarly the danger of overlooking the ruptured condition of the organ must also be very great, as exemplified in the case related by Le Lorrain and Bazy and mentioned in the *British Medical Journal* of December 23rd, 1905.

In connection with the carrying out of such operative methods the two questions that have been raised, are indeed most pertinent. The possibility of the surgeon being unaccustomed to abdominal operations, implies a very awkward state of affairs when a case of this nature suddenly presents itself before him, and when he is perhaps the only medical man for miles around, as is not uncommonly the case in countries abroad. The only remedy is for surgeons to take care to train themselves for dealing with this, anything but rare variety of cases. The dangers accompanying the operation and after-treatment of the case, involving the second question raised, may, to a large extent, be minimised by following some careful and simple method such as I have described in my paper referred to. The abdominal wound in my case, while it undoubtedly simplified the diagnosis of the exact nature and extent of the lesion, rendered the liability at least to septic infection of the peritoneum, correspondingly great. The tissues making up the splenic pulp are very ill-adapted for the application of sutures or of ligatures to vessels, but this difficulty in my experience does not extend to the tissues composing the pedicle of the spleen even where the organ is somewhat enlarged and affected with malarious disease. At any rate, ligatures in the case I have described held admirably and the patient had practically recovered in a fortnight after the operation.

A CASE OF EXTRA UTERINE PREGNANCY

By A. MARTIN LEAKE, V.C., F.R.C.S.,

Chief Medical Officer, B. N. Ry

I THINK the following case is of sufficient rarity and interest to justify its publication.

The patient, a Hindu woman, aged 38, was admitted into the Hospital at Khaigpur in September, 1905. She gave the following history—She was married at the age of 14, and has had 4 children, all living and well, the youngest now aged 10 years. Seven and half years ago she again became pregnant. The pregnancy was accompanied by pains and was unlike any of her

previous ones. At the 7th month she was suddenly seized with violent pains which were so severe that she became unconscious. After this attack pains resembling those of labour continued for about a fortnight and there was a scanty red discharge. The discharge continued for some time about a month, and then gradually ceased, menstruation recommenced about 4 or 5 months later, it was scanty and ceased 3 years ago. The abdomen became slightly smaller after the attack.

Four months ago the present pains commenced, and they have got so bad lately that she has not been able to get about at all. She thinks the pains were started by a blow which she had over the tumour. Bowels have always been regular.

Present state—Patient is very emaciated and feeble. In the lower part of the abdomen there is a large tumour reaching as high as the umbilicus. It is obliquely situated, the upper part being to the right, and the lower part to the left of the middle line. It is very irregular in shape and extremely hard. The upper end is rounded and separated from the rest by a groove. There is a small area in front, about the size of the palm of the hand, which is soft and fluctuating.

The tumour can be moved very slightly. P. V. there is a smooth round mass occupying the left side of the pelvis. The cervix is displaced downwards, is small and very soft. The body of the uterus cannot be made out separate from the tumour. Slight movement can be detected by pressing on the tumour from the abdomen.

Operation—The abdomen was opened in the usual way. The soft fluctuating area was found to be a cyst formed between the abdominal wall and the tumour and contained two or three ounces of treacly fluid. On separating adhesions the anterior surface and limbs of a foetus came into view. Posteriorly the intestines were adherent, but the adhesions were, for the most part, of a recent nature and easily separable. Some, however, were dense and firm and only separated with difficulty. The lower pole of the foetus was resting in the left side of the pelvis and embedded in soft, friable, deeply blood stained tissue, apparently the remains of the placenta. On separating the foetus from this, it was delivered without further trouble. Haemorrhage was easily controlled by pressure with mops. No attempt was made to remove the placental tissue.

The uterus was small and soft. The right tube and ovary appeared to be normal, on the left side they were so matted together with the placental tissue and intestine that they could not be found.

The abdomen was closed and the patient made an uneventful recovery, slight constipation during convalescence being the only trouble.

The foetus presents a mummified appearance and has in parts undergone fatty changes.

Indian Medical Gazette.

JANUARY, 1907

ANNUS MEDICUS, 1906

THE year 1906, though not marked by any great or startling discovery in the medical world of India, has nevertheless been one of steady progress. We do not propose to refer to medical progress in Europe, but to confine ourselves to a review of the most salient features of medical work and of service interest during the past year.

"THE INDIAN MEDICAL GAZETTE"

As regards the *Indian Medical Gazette* the year has been a most successful one, the number of subscribers has largely increased and what concerns the Editor more, the number of medical men contributing to its pages has been the largest on record. This is very satisfactory—a glance at the list of contributors, published with the annual index in our December issue, shows that all ranks in the service and a very considerable number of the non-official medical men (and especially we must mention the medical men of the various missions) are glad to make use of our pages.

During the year Lieut-Col John Maitland, I M S, of the Madras Medical College, retired from the service and resigned the Associate Editorship for Madras. He had for many years been a strong supporter of the Gazette, and had contributed many articles, both signed and editorial. His place has been taken as Associate Editor for Madras by Captain J W Cornwall, I M S, Director of the Coonoor Pasteur Institute.

During the year Brigade-Surgeon Lieut-Col A Ciombie died of a sarcomatous tumour of the spine. He was for some years our Editor and took it over at a time when it was at its nadir of usefulness and with the aid of Major D M Mon, I M S, he pulled the Gazette together and restarted it on its present prosperous career.

THE FEVERS OF INDIA

Leaving ourselves and turning to the record of work for the year, the first point we must notice is the progress made in the differentiation of the fevers of India. There seems but little doubt of the entity and specificity of the fever well known in Chital and fully described in our columns last January by Capt R McCarrison.

It falls to the lot of but few medical officers to approach Chital, hence this fever is little known, and we would welcome further work at it.

SEVEN-DAY FEVER

The malarial fevers* have received attention, and the papers by Major Leonard Rogers and Captain J W D Megaw have done much to help in differentiating the malarial fevers of Calcutta from other short fevers with which they have been much confused. Great credit is due to Major Rogers for the establishment and separation of what he has called the "Seven-day fever of Calcutta." The existence of this well defined fever is thoroughly established, but it is still a disputed point whether this fever is an entity *sur generis*, or an endemic form of dengue, as Capt Megaw has maintained. It is certainly not very like the universal and overpowering epidemics of dengue, but if it is dengue, it is an endemic form, and chiefly attacks newcomers. It probably exists in many other parts of India, and we hope that it will be looked for. Dengue, of the epidemic form, we all know is found not infrequently up-country and is by no means confined to the coastal regions.

RELAPSING FEVERS

The subject of relapsing fever in India is one which has received attention during the year. Capt W H Cox, I M S, and Lieut W T McCowen, I M S, have recorded outbreaks. The disease has always been present in Bombay City, where the classic work of Vandyke Carter, of the Bombay Medical Service, on spiroillum fever was done, the recent discoveries of the connection between ticks and the spirillar fevers is of great importance, and the most recent investigation points to the existence of several kinds of relapsing fever, and to the non-identity of the spiroillum or spirochaetes to give these microbes their newest name. *S obermereri* is now said not to be the cause of the Bombay relapsing fever (see *I M G*, December, p 490), and the Bombay spiroillum is different from that found in Europe (*S Obermereri*) and the African form, *S duttoni*. It is also said that these

* The deputation of Capt G E Stewart and Lieut A H Proctor, I M S, to study the fevers of Central Bengal in connection with the Drainage Committee is a distinct step forward. Till the nature of the fevers which have for years played havoc in Central Bengal is known, our attempts to remedy them by drainage or other measure is apt to be futile. What we need are facts, and on these facts our remedial measures should be based.

spirochætes are not protozoa, but bacteria, if so it is a remarkable new departure to find them transmitted by insects. The subject at present is therefore one of great interest.

LEISHMAN-DONOVAN INFECTION

As regards Leishman-Donovan infection and its resulting cachectic fever, not much new work has been done, beyond the discovery by Capt Patton, I.M.S., of its development in the bed-bug, and we await with interest the full details of this discovery. Much more information is wanted on the geographical distribution of this infection, and we would welcome papers on this subject. The bionomics of bugs is a subject needing elucidation, for at present but little is generally known as to the life habits of these always objectionable but now admittedly dangerous vermin.

MALTA FEVER IN INDIA

Distinct progress has been made, and by the publication of Major Lamb's *Memor*, recorded on the question of the existence and distribution of "Malta Fever" in India. We all know the history of this fever in India, we admit that the misleading and erroneous decision of one Laboratory as regards an imaginary identity between Malta fever and kala azar upset our faith in this method of fever differentiation, but we have already stated that, in view of Major Lamb's work, it must be admitted that Malta fever is one of the continued fevers of India, but still much remains to be done before its exact range is known. Hitherto it has been chiefly searched for and found in the Punjab, it probably exists in many other places, but this remains to be proved. As regards Calcutta and the Eastern parts of the two Bengal Provinces, it seems to be unknown, unless imported by ships, and neither in the laboratory nor at the bedside has any such indigenous fever been noted in Calcutta. We would be glad if medical officers meeting with proved or probable cases would report them to us. The distribution of Leishman-Donovan infection in up-country districts and of Malta fever in other districts than the Punjab are subjects well worth following up.

PLAGUE

Plague is a subject which has occupied the thoughts of many of us during the past year, the tenth year of the present pandemic. We devoted a special number to the subject, and have since published two other valuable articles

We have already dealt with the recent report of the Plague Commission and need only here again record the fact that the Commission strongly support the rat-flea theory of plague.

DYSENTERY

Another subject of vast importance in India is dysentery. A special officer has been deputed to study this subject, and we hope for good results, the differentiation of amœbic from bacillary dysentery and the relative prevalence of both is the first matter to be determined, at present we may say we do not certainly know which is most common, and the recent discovery of various kinds of intestinal amœbæ has rendered former views and assertions of doubtful value.

CEREBRO-SPINAL FEVER

Before we quit the subject of fevers we may refer to the admirable résumé of the history of cerebro-spinal fever in India published by Captain Robertson Milne. This is one of the greatest and most fatal of the fevers found in India. Fortunately it is not of widespread epidemic distribution, but in outbreaks the death-rate is as high as in plague. Every now and then we hear of bits of evidence pointing to its existence among the general population, though it has been chiefly in prisons that there has been opportunity of properly studying it.

ENTERIC FEVER.

The study of enteric fever in India has received a great impetus from the magnificent monograph by Major Ernest Roberts, I.M.S. This volume treats in a masterly way of the epidemiology of the formidable pest; it seems to us as if it had clearly pointed out where the defects in the surroundings of the British soldier and officer are, and no one who has carefully studied this book and read the actual descriptions of the almost indescribable filth of the ordinary conservancy arrangements in cantonments can any longer hug the comfortable delusion that the British soldier and officer acquires his infection in the bazaar. Whatever degree of infection may be in bazaars is a moot point (*qua* Eberth's bacillus), but there is no need to go so far, the filth and the infection clings to and around the cantonment latrine and the cantonment filth pits. As to the question of enteric in natives of India, we agree with Major Roberts as to its undoubted existence, but also with him that it is by no means common.

and in no sense is it a formidable disease of Indians of any age, in the way it is the most formidable disease of the young European in India. Major Roberts pleads for the use of septic tanks instead of the unsatisfactory cantonment methods of disposal. On the question of night-soil removal and trenching, we may say a few words based on a considerable experience of this method as carried out in prisons. In Jails we believe this system can and does work satisfactorily and well, but this can only be the case where supervision is strict and labour plentiful. Nevertheless in reading Major Roberts' account of cantonment methods we were haunted by an uneasy feeling that *de te fabula narratur*, that is, that the persistence of dysentery in jails may much resemble that of enteric in the European army, and that what he says of cantonment latrines and conservancy may partially apply to jail latrines and dysentery. Whether this is so or not, the remedy is plain, and that is the application of the septic tank method for disposal of sewage to both cantonment and prison latrines. The principle we admit, but we have yet to see the practical application of the septic tank to a big prison.

SANITATION

Meantime the work of Captain W. W. Clemesha, I.M.S., the Officiating Sanitary Commissioner, Bengal, and Dr. Fowler (the expert imported for a few months by the Government of Bengal) has shown that the use of chlorinated lime has removed the great danger of the effluent, and that septic tank effluent thus purified can with impunity be discharged in running streams or rivers. The cost of these installations is unfortunately great, but this must be faced.

SURGERY

On the surgical side a considerable amount of our space has been devoted to the battle of the "capsule," and to the merits and demerits of the operation so strongly advocated by Major Henry Smith of Jullunder*. We do not think Smith has yet succeeded in establishing it as the best operation, though in his experienced hands it has been very highly successful, still we think that there are other equally good ways of extracting cataractous lenses. Unfortunately the discussion has not always stuck to the point at issue,

and Major Smith's language as to the degree of authority to be given to the utterances and practice of European operators might have been more guarded and indeed more courteously expressed. We do not propose to inflict upon our readers more controversy, but are willing to welcome the experiences of operators on this or other method of extracting cataract, for if it can be shown by experience that in the long run the results of Smith's operation are as good or better than those by other and more time-honoured methods, public opinion will incline to that operation. It is one which undoubtedly needs practice, and the operator who "does his cataracts" by the thousand will naturally be more likely to succeed in this operation than he who reckons them only by the dozen, that it is the best operation for the comparative beginner we have not been convinced. Major Smith's enthusiasm and the number of operations he does in a year are a revelation, and the way he has worked up a small mofussal dispensary to be the largest cataract hospital in the world is deserving of recognition, and even the critics who dispute his pathology or his dogmas unite in paying every tribute to his enthusiasm and his skill.

RESEARCH INSTITUTES A NEW MEDICAL SCHOOL

Space forbids us to mention many other points of interest, the establishment of the Coonoor Pasteur Institute, of the Central Research Institute and of the X-Ray Institute show that India is not lagging behind in these lines of progress.

The foundation of a new medical school at Lucknow and the enlargement of the surgical wards and the better equipment of the Laboratories in the Calcutta Medical College, the extension of the Bombay Hospitals and the new operating theatre are all steps of progress.

Officers of the Indian Medical Service have also kept to the front as authors of books, *e.g.*, Roberts' *Enteric*, Newman's *Aseptic Surgery*, Windsor's *Toxicology*, Walter's *X-Rays*, Barry's *Travels in the Gates of the East*. These are not only good books in themselves, but are representative of the many-sidedness of the Indian Medical Service.

NETLEY

We have received a reprint of a very interesting article by Col. Kenneth Macleod, I.M.S., Honorary Physician to the King and recently Professor of Military Medicine at the Netley

* To distinguish Smith's operation the term "*Cataract Expression*" as suggested by Major Maynard might well be used.—Ed.

Army Medical School Since its institution no less than 3,000 officers of the I M S and the R A M C have passed through this school, and its name recalls to many an interesting and useful episode in their professional life

Just as the present Royal Army Medical Staff College is, or will be, a result of the great South African war, so Netley was the outcome of the Crimean war, and was due to the great personal interest taken by Queen Victoria in her sick and wounded soldiers. The foundation stone was laid by Her late Majesty on 19th May 1856. The first session of the Army Medical School began on 1st April 1863, and its doors as a medical school were closed on 31st May 1905, during this period no less than 3,218 surgeons on probation passed through, of these 1,687 belonged to the home medical service, 1,318 to the Indian and (up till 1880 when Haslet Hospital was organized as a Naval Medical School), 213 to the Royal Navy

The school was the outcome of the recommendations of the Royal Commission appointed in May 1857, under the able and sympathetic presidency of Lord Herbert of Lea (Sydney Herbert). Before that time two professorial chairs of Military Surgery had been in existence and supported by the State, viz, one in Edinburgh, founded in 1806 and first filled by Dr Thomson who wrote a book on the hospitals of the Waterloo campaign. The Dublin chair was founded in 1846 by Mr Tufnell, a retired army surgeon. Mr Tufnell's Museum was afterwards transferred to Netley. At the same time officers selected for the Army Medical Service were attached to the general hospital of Fort Pitt, Chatham, but the regular school was not opened till 2nd October 1860 at Fort Pitt, where it remained till 1863, when Netley was ready to receive it. Surgeon-General Thomas Longmore, whom many of us will remember, delivered the opening address at Fort Pitt as Professor of Military Surgery.

At the time of the opening of the Netley School there were many changes in the air, and for nearly five years, after the Crown took over the Government of India from the Company, no admissions took place to the Indian Medical Service. The question of amalgamating the A M D and I M S was under discussion for the greater part of this time, the final decision being against amalgamation. The last admissions to the I M S under the former regulations took place on 1st October 1860, and it was not till 1st April

1865, that the next examination was held. Naturally, those officers who entered the I M S in 1865, after it had been closed for nearly five years, were fortunate in their promotion.

In February 1865, a batch of 77 Assistant Surgeons were gazetted to the A M D, at the close of their Netley training. Six of these officers resigned their commissions in the A M D to compete for the I M S in April, viz, R Harvey, who stood second in the list, J Cleghorn (4th), J Bennett (8th), H Cook (11th), J T Welsh (45th), and A Barrie (61st). The first man of this batch was W H Jameson. It also included J P H Boileau, whom many I M S men (perhaps we should rather say a few of the I M S men now serving), will remember as Assistant Professor of Pathology at Netley, and W Taylor afterwards Director-General. Sir W Taylor, K C B, who retired so recently as 31st December 1904.

The first batch of I M S men to enter the service on its reopening were the following —

I BENGAL

- 1 *Kenneth Macleod*, for many years Professor of Surgery in the Calcutta Medical College, LL D, Aberdeen, 1892, retired 16th April 1892, Professor of Medicine, Army Medical School, Netley, 1897 to 1905, K H P, 2nd May 1906, and author of the note on which this article is based.
- 2 *James Cleghorn*, good service pension, 2nd April 1894, Director-General, 29th March 1895, C S I, 22nd June 1897, Q H S, 5th October 1898, retired, 25th October 1898.
- 3 *Robert Harvey*, for many years Professor of Midwifery in the Calcutta Medical College, D S O, 19th February 1891, good service pension, 17th January 1894, LL D, Aberdeen, 1895, C B, 21st May 1898, Director-General, 25th October 1898, died of peritonitis at Simla, 1st December 1901.
- 4 *Robert Reid*, retired 25th April 1887.
- 5 *Benjamin Knowles*, died at Kohat, 29th June 1866.
- 6 *Andrew Skeen*, died of enteric fever at Kasauli, 10th June 1885.
- 7 *John Bennett*, retired 26th September 1890, died in Jersey, 23rd June 1899.

- 8 *Robert Bremner Thomson*, died at Dalhousie, 13th August 1869
- 9 *James Robertson Maclean*, died at Sialkot, 11th December 1869
- 10 *Eduard Barton Gardner*, killed at polo at Bareilly, 17th June 1886
- 11 *James Kelly*, retired 12th March 1886
- 12 *Lionel Dixon Spencer*, good service pension, 29th March 1895, C B, 27th August 1895, Surgeon-General, 25th October 1898, Retired, 16th June 1902, K H S, 27th January 1906

II MADRAS

- 1 *Alexander Porter*, retired 10th July 1895
- 2 *Thomas Edward French*, died at Bhandara, 28th December 1874
- 3 *Samuel Bradshaw Hunt*, retired 1st March 1898
- 4 *William Smyth Fox*, retired 7th May 1891, died in London 25th December 1903
- 5 *David John MacCarthy*, died at Sikandarabad 27th January 1891
- 6 *Wynne Staton Ranson*, died at Kurnool, 2nd July 1866
- 7 *James Atkinson West Spence*, retired 17th January 1881, died in London 5th November 1889
- 8 *Albert Macdonald*, died at sea on passage home, 24th May 1868

III BOMBAY

- 1 *Henry Cook*, Surgeon-General, 2nd March 1896, died of heart disease at Bombay 15th August 1897
- 2 *Isidore Bernadotte Lyon*, C I E, 24th May 1889, retired 2nd April 1892, author of the well-known *Medical Jurisprudence*
- 3 *Samuel Duckering*, retired 21st May 1874
- 4 *A Brown*, died at Malta, 27th July 1866
- 5 *John Thompson Welsh*, retired 27th October 1885
- 6 *John Williams*, (?) Died (?)
- 7 *Andrew Barry*, retired 31st August 1895

Out of the total 27 officers, six died in the first five years of their service, six more died at a later period, and now, over thirty years later, eleven are still living (Bengal 5, Madras 2, Bombay 4)*

In 1871 the naval surgeons were sent there till 1880 when Hasler was opened

The new school was lucky in its first professors, the names of Parkes, Aitken, Maclean and Longmore were names of which any school might be proud. Parkes had served for some years in the Army Medical Service in India, but at the time of his going to Netley he was Professor of Medicine in University College. Sir William Aitken has been the pathologist appointed and sent out to study the diseases which ravaged the army in the Crimea. Maclean had entered the I M S in 1838, had served in China in 1840-42, and when Residency Surgeon at Hyderabad he started the now well-known medical school there. He was a Presidency Surgeon in Madras when he accepted the post of Professor of Medicine at Netley. His little book on tropical diseases was well-known to a past generation and is still well worth reading. He continued to teach at Netley for 25 years. Sir Thomas Longmore was a recognised authority on military surgery, his text-book on bullet wounds has only recently become superseded, he held the chair for no less than 31 years, 1860 to 1891. The following list shows the occupants of the professorial chairs from the beginning to the end —

HYGIENE

Dr Edmund Alexander Parkes	March 1860 to March 1876
Surgeon Major F S B F De Chaumont	March 1876 to April 1888
Colonel James Lane Nottor	Oct 1888 to Sept 1900
Lieut Colonel R H Firth	Sept 1900

PATHOLOGY

Sir William Aitken	March 1860 to June 1892
Dr A E Wright	Sept. 1892 to Jan 1902
Lieut Colonel W B Leishman	Feb 1903

MILITARY MEDICINE

Surgeon General W Campbell Maclean	March 1860 to 1886
Deputy-Surgeon General David Boyes Smith	1886 to June 1889
Surgeon Colonel Henry Cayley	June 1889 to July 1897
Colonel Kenneth Macleod	Aug 1897 to July 1905

MILITARY SURGERY

Surgeon General Sir Thomas Longmore	March 1860 to Oct 1891
Colonel C H G Godwin	Oct 1891 to Aug 1892
Surgeon General W F Stevenson, C B	Aug 1892 to July 1905

* For the information in the above para we are indebted to Lieutenant-Colonel D G Crawford, I M S — ED

The transfer of the Army Medical School from Netley was the outcome of the somewhat excited and misleading newspaper controversy over the medical arrangements of the South African War. It seemed good to the newly appointed Advisory Board to recommend a Medical Staff College to be situated in London. This new College will be on the site of the old penitentiary at Milbank, and temporary arrangements have been made to use the laboratories of the Royal Colleges on the Embankment.

The Army Medical School at Netley was closed on 29th June 1902 and an address was given by Lord Roberts, then for some years up to 31st May 1905, two months' courses were held, but on the latter date Netley was finally closed, and its career of usefulness as a medical school came to an end.

Such is a brief history of the Netley Medical School, it had its faults, and some twenty years ago it was certainly obsolete and behind the times, but of recent years the appointment of Dr (now Sir A. E.) Wright gave a great impetus to the school, and the younger generation of men in the I. M. S. certainly are glad to own how much they are indebted to the teachings of this original and extremely able teacher.

Netley Furt. It remains to be seen whether under the new conditions the new College will turn out as many able men. The old school certainly fostered those sentiments of *camaraderie* and *esprit de corps* which are mostly influences for good. We wonder if the new College will do as much.

Current Topics

MINOR MALADIES

UNDER the title of *Minor Maladies and their Treatment*,* Dr Leonard Williams of the Metropolitan Hospital has published a fascinating and thoroughly practical little book.

All of us remember when we were first qualified and attempted practice how it happened that the ailments we were called upon to treat could seldom be classified under any of the headings of the great diseases with which we had a good text-book and bedside acquaintance. For one case of pneumonia or typhoid we met with dozens of minor ailments, with which we had but small acquaintance, and which we had

seldom or never seen while we walked the hospitals as the obsolete old term was. Some of us may remember purchasing Dr Lionel Beale's book on minor ailments, hoping therein to find guidance along the lanes and byepaths of general practice.

It is probably one of the results of the modern laboratory method of education that the student who has just qualified, with honours it may be in pathology or bacteriology, feels himself often at a loss when confronted with indigestion in a middle-aged man or rheumatism in an old lady. In time the practitioner learns all this, but text-books will teach him little and what he learns is from experience. In this respect we venture to think that the old system of apprenticeships turned out men more ready to drop into the ways of the experienced general practitioner.

Dr Williams' book supplies in a readable and accessible form detailed information on many such subjects which are only dealt with in ordinary text-books in the most cursory manner. On these matters the qualified man is expected to speak and act with authority, and the sooner he learns the better for his practice.

Dr Williams' book begins by an admirable chapter on colds, coughs and sore-throats, still better in our opinion is the very practical chapter on indigestion. There are few of us who are called to treat this protean complaint, who, even if they have well studied the latest American text-book on the stomach, will not have clearer ideas as to diagnosis and successful treatment after reading Dr Williams' chapter. The portion of the book dealing with constipation, diarrhoea, rheumatism, headaches, and neuralgia are equally practical and useful, while there will be few who will not be the better for a perusal of the chapter entitled goutiness. Others on change of air, general health, some drugs and their uses, and on insanity as seen by the ordinary practitioner are also good. The remarks on the vital importance of fresh air, on the too great tolerance of medical men to their patient's prejudices are very interesting. As to clothing, Dr Williams lays down that the ideal amount for a healthy person is "the minimum which will protect that person from undue depression of temperature while following his usual employment: the great majority of people are grossly overclothed." In the same way Dr Williams attacks the use of woollen under-clothing, and instead, strongly recommends the more modern forms of silk and cotton clothing with plenty of air spaces. On the subject of diet our author is again practical, and he strongly insists on a fact, on which most medical men agree, but which their patients seldom will believe, that is, that we all eat too much.

We can thoroughly recommend this little volume to the younger generation of medical officers, if the older ones read it too, they will be all the better for it.

* *Minor Maladies.* By Dr. Leonard Williams. London, 1906, Baillière, Tindall & Cox. Crown 8vo. Price 5s.

THE PREVALENCE OF INTESTINAL WORMS IN MAN

THE following tables are taken from a valuable statistical study by Dr C Wardell Stiles and P E Garrison, which is published as Bulletin 28, Hygienic Laboratory (Washington Government Printing Office, 1906)

We have on a former occasion noticed previous monographs on this subject by Dr Stiles, but

the present one is so complete and full of information that we commend it to the notice of all interested in helminthology, a subject on which we have, from time to time, published many papers, from Major Calvert, Lieutenant-Colonel E Dobson, Lieutenant-Colonel T Grainger, Major Fearnside, Major R H Maddox and Captain Clayton Lane, some of whose figures are quoted in Dr Stile's table below —

TABLE I
Frequency of intestinal worms in man

Authority, locality and date	No of subjects examined	Infected		INFECTIONS			
				Trichuris trichura		Oxyuris vermicularis	
		Number	Per cent	Number	Per cent	Number	Per cent
Stiles and Garrison, U S A 1906	3457	349	10.1	267	7.72	45	1.3
Ashford, King & Gutierrez, Porto Rico, 1904	4482	1,482	100	326	7.2	3	0.07
Boycott, Cornwall, 1904	98			38	38.7	2	2.04
Daniels, British Central Africa, 1901				7	2.7		
Strong, Philippines, 1901	2179						
Major J T Calvert, I M S, Darbhanga District 1901	160	92	92	12	12	9	9.0
Major C Fearnside, I M S, S India, 1900	578			61	6.9		
Cima, Italy, 1893 and 1896	110	50	45.45	41	37.27	7	6.36
Gubareff, Russia, 1896	456	325	66.87	212	43.62	4	0.82
Heisig, Greifswald, 1893	230	114	49.56	104	45.21		
Dobson, India, 1893	1249			55	4.40		
Grusdeff, Kostroma, Russia, 1892	260	119	45.77	6	2.31	192	15.37
Grechaninoff, St Petersburg 1890	583	337	57.80	154	26.41	6	2.31
Baranowski, Moscow, 1889	1,000	331	33.10	53	5.30	64	10.95
Kessler, St Petersburg, 1888	600			30	5.00	80	8.00
Sievers, Kiel, Germany, 1887	2,629			521	19.81	43	7.16
Friedrich, Munchen, 1887	107	19	17.76	10	9.34	326	12.40
Banik, Munchen, 1886	315	126	40.31	26	8.25	3	2.80
Szydlowski, Dorpat, 1879					4.00	95	30.15
Roth, Bale, Germany, 1877-1880	712			178	23.67		0.00
Gribbohm, Kiel, Germany, 1872-1877	972	484	49.80	313	32.29		
Heller, Kiel, Germany, 1872-1875	611	291	47.62	187	30.60	226	23.30
Cruse, Dorpat, 1872	482					142	23.25
Muller, Erlangen, Germany, 1862-1873	1,753			195	11.11	213	12.13
Muller, Dresden, Germany, 1852-1862	1,939			50	2.57	43	2.21

TABLE II

Authority, locality, date of publication or of examination	INFECTIONS									
	Hook worms *		Ascaris lumbricoides		Strongyloides stercoralis		Hymenolepis nana		Taenia saginata	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Stiles & Garrison, United States, 1906	56	1.04	17	0.49						
Ashford, King & Gutierrez, Porto Rico, 1904	4,482	100.00	1,408	31.41	8	0.23	12	0.35	2	0.06
Boycott, Cornwall, England, 1904	4	4.18	12	12.24	36	0.80			4	0.07
Wellman, West Africa, 1904	13	4.19	158	50.97	2	0.65			0	0.00
Daniels, British Central Africa, 1901	25	9.26	15	5.98	3	1.20			2	0.65
Strong, Philippine Islands, 1901	54	2.48			13	0.60				
Calvert, India, 1901	83	83.00	Most common intestinal worm						Present	
Fearnside, India, 1900	78	65.83								
Cima, Italy, 1893 and 1896			39	39.00					1	0.91
Gubareff, Russia, 1896			282	32.12					3	1.64
Heisig, Greifswald, 1893			31	28.18					1	0.43
Dobson, India, 1893			110	22.63			7	6.36	18	1.44
Grusdeff, Kostroma, Russia, 1892			4	14.78						
Grechaninoff, St Petersburg, 1890			131	10.49						
Baranowski, Moscow, 1889			56	33.03						
Kessler, St Petersburg, 1888			218	47.39						
Sievers, Kiel, Germany, 1887			101	10.10					6	2.60
Friedrich, Munchen, 1887			35	5.83					22	3.66
Banik, Munchen, 1886			436	16.58					8	0.50
Szydlowski, Dorpat, 1879			7	6.54						
Roth, Bale, Germany, 1877-1880			23	7.30						
Gribbohm, Kiel, Germany, 1872-1877				25.00					4	1.27
Heller, Kiel, Germany, 1872-1875			86	11.43						
Cruse, Dorpat, 1872			178	18.31						
Muller, Erlangen, Germany, 1862-1873			108	17.67						
Muller, Dresden, Germany, 1852-1862			50	10.37						
			227	12.93						
			190	9.28						

* Known elsewhere as *ankylostomes*, of which there are several distinct varieties

TABLE II —(Continued)

Statistics of the frequency of intestinal worms in man, reported by different authors—Continued

Authority, locality, date of publication or of examination	INFECTIONS						
	Trichostrongylus		Dibothriocephalus latus		Total infections		Post or ante mortem
	Number	Per cent	Number	Per cent	Number	Per cent	
Stiles & Garrison, United States, 1906	0	0.00	0	0.00	387	11.19	Ante
Ashford, King & Gutierrez, Porto Rico, 1904	1	0.02			6,259	139.64	Ante
Boycott, Cornwall, England, 1904	0	0.00			56	57.24	Ante
Wellman, West Africa, 1904			4	1.29	179	57.75	Ante
Daniels, British Central Africa, 1901					50	19.93	Ante
Strong, Philippine Islands, 1901	Present						Ante and Post
Calvert, India, 1901					143	143.00	Ante
Fearnside, India, 1900					921	104.90	Ante
Cima, Italy, 1893 and 1896	0	0.00			87	79.03	Ante and Post
Gubareff, Russia, 1896	24	0.82	33	6.79	371	76.32	(?)
Heisig, Greifswald, 1893	1	0.43			140	60.85	Ante
Dobson, India, 1893					1,340	107.28	Ante
Grusdoff, Kostroma, Russia, 1892	1	0.38	44	16.92	143	55.00	Ante
Grechaninoff, St. Petersburg, 1890			4	0.68	440	75.47	Ante
Baranowski, Moscow, 1889	11	1.10	9	8.90	360	36.00	Ante
Kessler, St. Petersburg, 1888	18	3.00	47	7.83	195	32.48	Ante
Sievers, Kiel, Germany, 1887	.				1,291	49.09	Post
Friedrich, München, 1887					20	18.63	Post
Banik, München, 1886	1	0.32			149	47.30	Post
Szydlowski, Dorpat, 1879		Rare		10.00		39 +	Ante
Roth, Bâle, Germany, 1887 1880					264	35.10	Post
Gribbohm, Kiel, Germany, 1872 1877					717	73.81	Post
Heller, Kiel, Germany, 1872 1875					437	71.52	Post
Cruse, Dorpat, 1872	1	0.20	29	6.00	80	16.57	Post
Müller, Erlangen, Germany, 1862 1873					635	36.18	Post
Müller, Dresden, Germany, 1852 1862					273	14.07	Post

HEALTH OF MADRAS CITY IN 1905-06

IN the last quarter of the year small-pox prevailed much in the City of Madras, as it did in many other parts of India at the same time. There were 1,458 attacks reported and 694 deaths. Vaccination in childhood was effectual in case of children under 12 years, but it is probable that revaccination would have saved many more as the average age of those attacked was 18 years. Out of some 30,000 deaths from all causes in 3,663 the actual cause of death may be taken as really known, these having been certified by medical practitioners. It is probable that a small fee for such certification would lead to increased accuracy therefore in the mortality statistics of the city.

The year was an unhealthy one, and the death-rate is no less than 59 per mille against a quinquennial mean of 42.7 per mille. These figures are however based on the 1901 census, and the real population was considerably greater. Cholera too prevailed and caused 3,684 deaths out of 5,067 reported cases. The Royapuram Plague Hospital was converted into a Cholera Hospital, and two other hospitals were also used for the cholera patients. It is said that the disease was "probably imported" from Chingleput district where cholera prevailed and from which many beggars came to Madras, to share in the distribution of food. Unfortunately at this time the pipe water supply was very bad and insufficient, but it was shown in one district

that when wells were closed and the "offensive" pipe water was used the cholera ceased. The Report gives the following as factors in the spread of the cholera: (1) scarcity, with consequent consumption of bad food, (2) a foul water-supply, and (3) flies. All classes suffered, and Eurasians the worst. We have in our special plague number published a paper on Plague in Madras. The passport system was continued, and though plague did appear, it was in numbers which in any city in Northern India would be considered very small. A systematic campaign against rats was carried out, and put in charge of Capt. W. A. Justice, I.M.S. One portion of the city was evacuated, and 8,000 people housed in a health camp and the evacuated are thoroughly cleaned and rid of rats. All seagoing vessels and their crews were also disinfected.

The subject of the nature of the fevers of Madras was one which received attention of a special inquiry, the following are the results as given in this report—

"The number of deaths registered from malaria was 818 with a ratio of 1.6 per mille. The mean ratio for the previous five years was 0.3. In order No. 752, dated 1st September 1904, Government approved of the proposal of the South Indian Branch of the British Medical Association that an investigation should be made into the causation of malaria in the town and suburbs of Madras, one half of the cost being met from funds contributed by the Corporation and the remaining moiety being allotted from Provincial funds.

"At the time of making their proposal, the South Indian Branch of the British Medical Association had

particularly in view investigations into the causation of 'Chronic Malaria' or Black Town Fever

"Four Assistant Surgeons were appointed for the work on 1st April 1905 and continued their investigations until 1st April 1906. Before they had got definitely settled down to work, however, the immediate factor in the causation of Black Town Fever had been discovered and, as stated below under 'Kala Azar,' the disease was found not to be malarial in origin at all.

"Much useful work was done by the Assistant Surgeons with regard to the prevalence of malaria, &c, in Madras, and although 818 deaths are registered as having occurred from this cause during the year, exceedingly few cases of genuine malarial infection contracted in Madras were discovered by them.

"*Kala Azar*—This disease which appears for the first time under this name as a cause of mortality in Madras has long been familiar to medical practitioners in the city under the names of 'Chronic Malaria,' 'Black Town Fever,' &c. With the discovery of the specific parasite causing the disease, by Donovan the controversy as to the relationship of the affection to malaria was set at rest. It is now recognised as a separate and distinct disease, synonymous with the disease long known as 'Assam fever' or 'Kala Azar.' The disease is characterised by (1) Irregular fever, (2) Progressive enlargement of the spleen, (3) Progressive wasting, (4) Swelling of feet and legs, (5) Diarrhoea simulating Dysentery, and (6) Enlargement of the liver. It is almost invariably fatal.

"69 deaths were registered as having occurred from this disease during the year and all these cases were certified either by Medical Officers of Hospitals or by private practitioners.

"Of the general mortality, 1 death in 7 is certified by a qualified medical man applying this ratio to Kala Azar the total number of deaths from the disease during the year would be 483. This may be too high a figure, but at any rate the disease is common."

BERI-BERI IN MALAYA

DANIELS (Studies from Institute for Medical Research, F. M. States, 1906, Part I) gives the following conclusions on his study of the beri-beri question in the Federated Malay States—

"1 That beri-beri is an infectious disease. As a rule, a short period of incubation and a period of exposure of less than three months are requisite for full development of the disease where the endemic index is high.

"2 That there is no definite proof that an intermediate host is required, but the balance of evidence is against its being conveyed by earth, air, water, or food, or contamination with sewage or other faecal matter.

"3 That there is some evidence that, for a short period only after the occupation of small spaces, beds, bedrooms, etc., the 'poison' or carrier of infection may remain.

"4 That food, either as regards quantity and quality, its nature or relative proportions, may have an effect on the susceptibility of the patients, though the proofs are not conclusive, but is not the causative agent.

"5 That if an intermediate host for the unknown parasite is required, it must be either a cimex or a pediculus. That pediculi, as carriers, would better explain the incidence of the disease than any other blood-sucker.

"6 That a closer enquiry into the earlier stages of the disease is required. That where opportunities for such an inquiry occur, renewed attention should be bestowed on the blood and tissues, with a view to determining the presence or absence of any protozoan.

"7 Prophylaxis. That in view of the failures of various attempts at disinfection of buildings and places, and of various modifications of diet to have marked effects, more attention should be paid to limiting the

chances of personal infection, and that particular attention should be paid to the personal cleanliness, freedom from vermin, and isolation of early, or trivial cases of the disease."

Beri-beri in Burma and Madras is a subject which, we hope, will soon be taken up and examined by a small Committee of expert workers. This is the only way from which good results are to be expected.

THE news that Sir Patrick Manson has admitted a cure of sleeping sickness in the person of Mr Fraser, son of the Lieutenant-Governor of Bengal, is very satisfactory. Mr Fraser contracted this fell infection in Uganda, some years ago. It is known that Trypan red, which gave good results in animal trypanosomiasis, gave rise to nephritis in human subjects. The anilin compound called 'atoxyl' has been used with success according to Breinl and Thomas, and Koch has recently pronounced in its favour. It is used hypodermically, in a 20 per cent salt solution, and warmed to blood heat. The dose is 0.6 ccm for a few days, and then it is gradually increased till as much as 1 ccm is taken daily. On the first sign of intoxication the dose is reduced. It must be continued for a long period.

THE question of the possible introduction of this disease and its vehicle *Glossina palpalis* into India is not to be lost sight of. Fortunately in Capt Grieg, I.M.S., the Government of India have an expert on this subject.

MACHENNAN (*British Medical Journal*, October 20th, 1906) notes that he has discovered spirochaetes in sinews from a papiloma in recurrent yaws. The method of staining was by Giemsa's solution and gentian violet, and the spirochaetes observed, possessed the same properties as the *spirochaete pallida*, but that the staining was fainter. Loops in the course of the filament were observed, as in the case of the *spirochaete pallida*. In the *granuloma pudendi*, on the other hand, no organism was seen at all resembling the *spirochaete pallida*. A few organisms resembling the *spirochaete refringens* were seen, and a number of highly refractive, very long spirochaetes, with fine and close waving.

In the *Calcutta Medical Journal* (November, 1906) Dr Bipin Behari Ghosh, M.B., records eleven cases of scarlet fever met by him in Hindu patients, children, in Calcutta. The clinical history, as there recorded, seems to be that of scarlet fever. The well-known rarity of this fever as an indigenous fever in India makes this record interesting. The possibility of cases of seven-day fever (or dengue if it is dengue), being mistaken for scarlatina should, however, be borne in mind.

THE rarity of indigenous scarlatina was made clear by the collective investigation made by the *Indian Medical Gazette* in August 1899. It is well known that cases occur especially among European soldiers' families, but in nearly every case infection from Europe can be traced. For some unknown reason the disease does not flourish in India, and this fact also obtains in the West Indies, in Further India, China, Japan and Malaya. That is, cases have been known, but the disease is not an indigenous disease as it is in Northern Europe.

We are very glad to see in a recent issue of the "Gazette of the United Provinces of Agra and Oudh" that the Inspector-General of Civil Hospitals has been nominated a member of the Legislative Council of those Provinces. This, we hope, is only the first step towards the appointment of the Director-General, Indian Medical Service, the Surgeon-Generals and the Inspector-Generals in all the Provinces to seats on the Imperial, Presidential and Provincial Legislatures. We are certain that in the Hon'ble Colonel R. D. Murray the Lieutenant-Governor has chosen an able adviser, and we congratulate Colonel Murray on his appointment which we look upon as an honour to the whole service.

On page 398 of our issue for October 1906, Dr. J. W. W. Stephens, the Lecturer on Tropical Medicine, Liverpool, had a paper on the varieties of *Ankylostomes* in Assam, since then we have received the following further communication from him—

"Recently six males and five female *Ankylostomes* were sent to me from Coimbatore by Major Williams, I.M.S. On examination I find that none of these belong to the genus *Ankylostomum*, but all are species of *Necator*, so that we can now state that *Necator* exists in Madras, Burma and Assam."

Reviews.

A Treatise on Materia Medica and Therapeutics—By RAJNALDAS GHOSH, I.M.S., edited by C. P. Lukis, M.D., F.R.C.S., Lt Col, I.M.S. Third Edition. Price, Rs 5.

THIS is a new edition of a book which attained a great degree of popularity in its earlier editions, and which has been out of print for some time.

As stated in the preface, the first edition which was in two volumes was essentially the work of the original Author, who died before the second volume was issued, and who, on his death bed, requested that his work should not be allowed to die. Apparently Col Lukis accepted this request as a sacred trust, and edited and saw the book through the press.

The present edition has been thoroughly brought up to date, and two new parts have been added by Col Lukis, but the original plan and character of the original work have been as scrupulously maintained as the fulfilment of modern requirements allows.

The first four parts, comprising 167 pages, are given up to *Materia Medica Proprii*, Pharmacy, Pharmacology and Therapeutics. The main feature of these parts is the condensation of the information required by the student into the most compact and available form, and the adaptation of many of the methods described to tropical conditions.

On page 105 there is a statement which will not be generally accepted by the majority of the European members of the medical profession in India, viz., "An Indian villager getting an attack of intermittent fever can be cured by 10 to 15 grains quinine sulphate, while the same fever in a European would require at least four times the quantity."

This statement has probably been allowed to stand by oversight, as it receives no support in the paragraph on the Therapeutics of quinine, where the dosage is stated in accordance with the most approved modern views.

Part V on *Materia Medica* and Therapeutics constitutes the greater part of the book. In it will be found a reliable and thoroughly up to date account of all the drugs in common use, then therapeutics and pharmacology being fully treated, and in many cases practical prescribing hints of the greatest value are added.

The feature of this part of the book which will appeal most to the practitioner in India is the fair and impartial account of the indigenous drugs which have been found of value, this information will not be found in such a convenient and reliable form elsewhere, and its inclusion is certain to add greatly to the popularity of the book, especially among European Practitioners, who often feel that they are hampered by the lack of just such knowledge as they will find here.

It is, however, to the two new parts of the book, those on Serum Therapeutics and Organotherapy, that our readers will naturally turn with the greatest interest. These are written by the Editor, Col Lukis, Principal and Professor of Medicine of the Medical College of Bengal, who comparatively recently undertook a special course of study in modern pathology, the thoroughness of which is fully vouched for by his remarkable achievement in gaining the Gold Medal in the London University M.D. examination.

We think that the reader will have no cause to complain that Col Lukis has in any way fallen short of the anticipated standard, for we find condensed in a few pages a sound and temperate account of all the Serums and Organic extracts which have been experimented with, of recent years.

In the account of Anti-Cholera Inoculation and of Anti-Tetanic Serum the teaching differs somewhat from that usually accepted, but as in both cases the author speaks from personal experience, his views are entitled to be heard with respect, and they will probably throw a flood of light on the many instances of disappointing results which have occurred in the practice of the readers of the book. The official dosage of antivenene is shown to be entirely inadequate, it is pointed out that the dose of venom injected by a healthy cobra is about ten times as much as was assumed by Calmette, and therefore that the dose required to neutralize the poison should be ten times as much as that recommended by Calmette and Lamb.

These instances will suffice to show that the author has not been content to accept any teaching, no matter how familiar it has become by frequent repetition, but has subjected all the remedies described to the test of practical experience, or where this was not possible, to the light of independent and candid criticism. For this reason the author's views will naturally be received with much more confidence than those found in the ordinary compiled text books.

The more important subjects dealt with in the new parts of the book are Anti-Cholera, Anti-Plague and Anti-Typhoid Inoculation, Anti-Tetanic Serum, Antivenene, Anti-Streptococcic Serum, Sclavo's Serum, Anti-Dysenteric Serum, Anti-Plague Serum, Tuberculin, Pollantin, Coley's Fluid, and Wright's Anti-Staphylococcic Vaccine. The part on Organo Therapy is written in the same critical manner as that on Serum Therapy, the author showing no sympathy with the extravagant claims that have been made for many of the animal extracts.

The more important extracts discussed are Thymus Extract, Mobius's Serum, Adrenalin, Extract of Duodenal Mucous Membrane, Bone Marrow, Spleen and Kidney Extracts.

We know of no book on *Materia Medica* which can compare with this for up-to-date and reliable information, and we can confidently recommend it to our readers as the best guide to the subject that is available for Indian practitioners and students.

The book is of handy size and is very cheap, but it is a pity that considerations of price have necessitated a binding and 'get up' which is scarcely worthy of the contents of the book.

Manual of Surgery—By ALEXIS THOMSON and A. MILES. Second Edition. Revised and Enlarged. 313 Illustrations. Edinburgh: Young J. Pentland, 1906.

THE first volume of the second edition of this admirable manual of surgery has appeared in less than three years from its first publication. The new edition has been thoroughly revised and in some parts re-written, many new illustrations have been added including a series of microphoto-

graphs of the most important bacteria concerned in surgical diseases.

The new edition furnishes a systematic view of present-day surgery, it is in our opinion an ideal student's manual, and can also be strongly recommended to the general practitioner. The volume forms one of an admirable series published by Young J. Pentland. It is well got up, well printed, and especially handy to use. It is a book to be strongly recommended as a systematic review of the latest development of surgical work.

The Extra Pharmacopœia—By DIS MARTINDALE and WESTCOTT. Twelfth Edition. Pages 1045. Size Med. 24mo. Price 10s. nett.

THIS book is too familiar to require much comment.

The earlier editions were marvels of condensation, but this contains 250 pages more, without any great increase in size, the book being still sufficiently small and compact to satisfy the greatest stickler for economy in space.

The book is essentially a work of reference, and the authors seem to have taken a pride in crowding everything into the book that could possibly be looked for.

There are some things which might have been excluded without disadvantage such as the long account of the chemistry of radium, and the account of the morphology of the malaria parasite. The former is obviously the work of an enthusiast who has devoted much time to the study of radium, but the space devoted to this element is out of all proportion to that allowed to other agents of equal importance. On the other hand, in the account of the malarial parasite, we read that the Malignant Tertian parasite is distinguished by the presence of Schuffner's dots, so that here we are obviously dealing with an inaccurate compilation which might with advantage have been omitted.

One is also surprised to find on page 771 that malaria seems to confer an immunity against tubercle bacilli.

It would be strange, however, if there were no lapses, especially when tropical diseases are involved.

It is, however, only in those parts of the book where the authors allow themselves to digress from the subjects which form the legitimate subject of their book, that mistakes are to be found. The main part which deals with remedies is a model of accurate and full information.

The free use of various styles of type adds much to the ease of reference, and the ingenious system of indexing is also helpful in this respect.

The small type and thin paper would be trying if the book were not meant chiefly for casual reference, but as it is, most of us in this country of frequent moves will appreciate a book which takes up so small a space in our luggage.

Green's Encyclopedia and Dictionary of Medicine—Vol II, Bread to Ear Wm Green & Sons, Edinburgh and London

WE have already (Vol XLI, p 336) noticed the first volume of this remarkable work, the second is now before us and runs from the words 'Bread' to 'Ear'. The same features which characterised the first volume are present in the second. The work is not only an encyclopedia of all branches of medicine, surgery and allied arts, but it is also a medical dictionary. In this volume, for example, there are no less than 1,758 subjects dealt with, of these there are 80 articles of over 1,000 words, on such subjects as burns, bronchitis, cholera, cataract, diabetes, diet, dysentery, &c. Even subjects like dechlorination, eyoscopy, or the dermatitis of coalminers are described. Of shorter articles there are over 200, on subjects such as bromism, calcium, canal boats, carbolic acid, coma, consanguinity, Colles' Law, &c, &c. Finally there are 1,478 short articles varying in length from ten lines to a few words, these are chiefly definitions. This is the dictionaryal part of the work, and is full and complete.

Free use has been made of cross references. That the book is up-to-date may be learned from the appearance of articles on the Drummond-Morrison operation (more usually we think known as Talma's operation, but it was first used, we learn, by Drummond and Morrison in 1896) on "cleidotomy," "cordentery," delta (as used for freezing point of urine or blood in eyoscopy).

The following list gives a few of the authors of the various articles—Mr Alban Doan writes on the broad ligament, Dr Watson Williams, on bronchitis, Mr Tubby, on bursæ, Mr Berry, on cataract, Dr A Davidson, on cholera, Dr Uguhart, on climatic insanity, Dr Hale White, on the colon, Mr S Stephenson, on the conjunctiva, Dr Ballantyne (the General Editor), on curettage, Surgeon Clayton, R.N., on dengue, Dr Williamson, on diabetes, Dr R Hutchison, on diet, Dr Davidson, on dysentery, Dr T Bai, on the ear, Dr McBride, on the tympanic membrane, &c.

These names are a guarantee of good work. The book is handsomely got up and well printed and illustrated, and is a useful book of reference on many subjects not found in ordinary text-books.

Mark's Annual Reports, 1905. Vol XIX

THE annual volume from this well-known firm at Darmstadt has reached us as usual, and as usual it contains a full report on the advancement of pharmaceutical chemistry and therapeutics during the past year. It is admirably arranged in alphabetical order and contains excerpts from numerous medical papers on the therapeutic value of a very large number of new preparations.

We recommend this report to our readers and to all interested in new drugs. The excellence of this firm's preparations is well known.

Handbook of Vaccination—By A P BALARAM Vauer Vilasom Press, Chowgat, 1906

THIS is a very useful little book on vaccination and contains in a concise form a large amount of information on the subject of vaccination. It begins by giving an account of the disease small-pox and its many varieties, and its differential diagnosis from other diseases with a skin-rash. Cow-pox and horse-pox are also described.

It seems to us to be a well-written little book, the information given is generally sound and accurate, and most hospital assistants and not a few other practitioners would be considerably benefited by a perusal of the book.

ANNUAL REPORTS

I

PROVINCIAL SANITARY REPORTS, MADRAS

Lieutenant Colonel H Thomson, I.M.S., submits the 42nd annual report of the Sanitary Commissioner with the Government of Madras for the year 1905, he having taken over the post so long held by Colonel W G King, on 1st October 1905.

The rainfall that year was 41 inches or $3\frac{1}{2}$ inches below the average, and the prices of food grains were high. The population of the Presidency under registration was 38,212,712 excluding Europeans and Eurasians. The recorded birth rate was 32 per mille, the highest ever yet attained, the Mahomedans having the highest birth rate and the Christians the lowest. There were 103 males to 100 females born. The death rate on the census population was 21.4, or 1.1 per mille less than in the previous year. The infantile death rate was 172, an improvement as compared with 183 in 1904. In municipalities the birth rate was 39.8 and the death rate 35 per mille, an increase of nearly 3 per mille over the former year.

The mortality from cholera in the Presidency was 0.5 compared with 0.6 of previous year. Madras City suffered worst, 7.2 per mille. Bellary 2.8, Chingleput 1.8, &c.

The Sanitary Commissioner remarks as follows—
"The working of the rules for combating cholera promulgated with G.O., No 1536 M, dated 9th September 1896, in the Municipal towns in which they were in force was closely watched by this office, and it is satisfactory to note that, owing to the timely measures adopted by the Municipalities concerned, the disease did not make any headway. In the case of towns to which the rules have not been extended by Government the Chairmen concerned were advised by this office to employ extra staff to arrest the progress of cholera."
"In Madras cholera broke out in a severe form about the beginning of the latter half of the year and counted as many as 3,534 victims. It was largely fatal in the months of July, August, September and October. The cause of the outbreak was probably due to some of the population having had to betake themselves to polluted sources of water supply when the Red Hills supply ran short of requirements. Effective measures were adopted by the Corporation to combat the epidemic. Observation and Preventive staffs were also employed in the suburbs of the City as a protective measure both of its health and of its water supply."

"Permanganate of potash as a means of purifying polluted water was as usual employed in the areas invaded by cholera and has been found to yield good results."

Plague was compared with its ravages in other parts of India was only slightly prevalent and caused 5,788 reported deaths, as compared with over 20,000 in the previous year. We condense the following note—The measures in force were condensation, isolation and segregation of patients and contacts, disinfection and the passport system with surveillance for 10 days. In view of possible importation from Burma disinfecting machines were supplied to the ports of the Presidency. A machine for disinfecting the boots of coolies was also tried, and the Petroleum Brazing lamp, which we described in a former issue, was largely used. A crusade against rats was vigorously carried on, and "common sense exterminator" here as elsewhere has been found extremely useful.

The "fever" ratio was 7.2 in rural areas and 5.7 in municipal towns. The following remarks are of interest—
"Wet cultivation in and around towns is usually regarded as one of the causes at work in the causation of fevers. In the municipal town of Cuddapah wet cultivation has been prohibited since the 1st of July 1904 in order to ascertain how such a prohibition affects the health of the town. The period

during which such cultivation has been kept in abeyance is too short for a satisfactory estimate to be arrived at. A few more years should pass before any opinion can be given on the results of the measure.

The question of the suppression of malarial areas infested with mosquitoes by relieving the waterlogged condition of the soil and by administering quinine to the inhabitants concerned, to which the special attention of local bodies was directed in G. O., No. 917 L., dated 2nd August 1904, has unfortunately not received that attention which it should. A beginning has been made in this direction in Kurnool, Malabar and Viragapatam. Godavari made a provision of Rs. 5,000 for this object, but no portion of it was utilized within the year. The majority of the local boards have not bestirred themselves in this matter which vitally concerns the health of the millions entrusted to their care.

The following remarks are of interest, we may note that there is no mention of any septic tank system—

"As regards sewage farming and the cropping of land used for trenching in nightsoil, no material improvement has been recorded. As mentioned in the report for 1904, sewage for the most part was allowed to soak into the ground or was collected in defectively constructed cesspools and removed to the nightsoil or rubbish depots where it was emptied. In a few instances, such as Salem, Negapatam, Burhimpore, Tanjore, Bezwada, Guntur, Kurur, Periyakulam and Vizianagaram, plots of ground were selected for sewage farming, whilst in Kurnool the sewage was utilized in six private gardens. In Bezwada the sewage farm, is badly situated, there being no soil on the site. In Chicacole a plot of ground has been selected for sewage farming and awaits the final approval of the site by the District Medical and Sanitary Officer. In Coimbatore the suggestions made by me during my recent visit to the town are being considered by the Municipal Council. In Rajahmundry nothing was done during the year owing to the term of the lease of the land having expired. Negotiations for a fresh piece of land were however in progress at the close of the year. In the City of Madras sewage farming is carried on on a large and profitable scale. Amongst the District Municipalities Tanjore shows the largest extent of land irrigated by sewage (19 acres) and has yielded a net profit of Rs. 2,620. In the other towns mentioned the expenditure exceeded the income because of improper management. The cropping of land trenched with nightsoil has received but scant attention. With the exception of Bellary, Palmi, Cocanada and Cannanore where the land was cropped, the nightsoil is buried in trenches and either sold or not made use of. In Bellary the attempt to grow cholam was partly unsuccessful owing to the failure of the rains. The Municipal Council of Negapatam proposes to try the experiment of cultivating the nightsoil depot in the current year, whilst in Cuddalore, where efforts to induce ryots to purchase the nightsoil have proved ineffectual, it is under consideration to lease out one of the nightsoil depots which had been fully used up more than a year ago for cultivation purposes with the view of demonstrating to the ryots the utility of nightsoil as manure. In Tirupati the nightsoil was sold to the Conservancy Agent who is reported to be manufacturing powder out of it. Much advance can be made in the way of popularizing nightsoil as manure if Municipal Councils start experimental gardens and afford object lessons to ryots and large landholders as to the use of this material as manure. Prejudice against its use is doubtless strong, but if it can be shown that none of its offensive qualities remains after it has lain buried for sometime and that it would increase the fertility of the land on which it is used, much of this popular opposition would vanish and a demand for it would be created."

The difficulties of the department can be understood from the following paragraph—

"Captain Elwes, I.M.S., held the post of Inspector of Vaccination and Deputy Sanitary Commissioner up to 7th December when he was relieved by Captain Cornwall, I.M.S., on return from furlough. Beyond attending to the disposal of the usual routine papers of the Vaccination branch his services were not at the disposal of the Sanitary Commissioner for the more important duties of inspection especially with reference to vaccination in rural areas. This was because much of his time was occupied at the Medical College as Professor of Hygiene and Bacteriology. When, however, during the College vacation he was at the disposal of this office he undertook the inspection of the work of Deputy Inspectors of Vaccination of the Madras and Masulipatam Ranges where certain irregularities were reported. His reports are recorded in G. O. No. 761 L., dated 20th July 1905, and G. O. No. 1287 L., dated 14th November 1905. This constitutes the total inspection work of the Inspector of Vaccination and Deputy Sanitary Commissioner, and more could not reasonably have been expected of him under existing arrangements. It is impossible for him to accomplish the duties of his office as Inspector of Vaccination and Deputy Sanitary Commissioner and at the same time lecture

and teach practical work in the Medical College. There is only one Deputy Sanitary Commissioner attached to this office and if his services are to be given over to the Educational Department as at present, the sooner the post of Deputy Sanitary Commissioner is abolished the better, as it is a misnomer. In this Presidency there are at work 60 Deputy Inspectors of Vaccination and for four years the work of these men has not been inspected by the Inspector of Vaccination. I need not say how necessary it is for frequent inspection of their ranges."

II BURMA

This report is the first submitted by Colonel W. G. King, C.I.E., I.M.S., Inspector General of Civil Hospitals and Sanitary Commissioner, Burma. The birth rates on a population of 5,861,020 was 34.3. It appears that this figure is about 10 per mille under the true rate, and Col. King thinks that 45 per mille is more like the true birth rate. The death rate for the Province is given at 24 per mille as against 21 in 1904 surely these are very low rates? The infantile death rate is given at 196. The following remarks are of interest— "Consequently, some effort at curtailing the sacrifice of infantile life might well be expected of the local bodies concerned. Milk in certain parts of Burma is an expensive item, and it may well be that mothers of the poorer classes are not in a position or, what amounts to the same thing in practice, have not the discretion to select suitable food for their infants, when they are not able to suckle them. Hence, I think in a country where charity counts for so much in the daily life of the people, suggestions by local bodies to the wealthy to erect 'milk depots' whence sterilized or pasteurized milk could be issued gratis for infants, after the model adopted in America, England and France, would secure ready adoption. By making this suggestion as to possibly indifferent quality of milk influencing the total infantile death rate, I would by no means withdraw attention from the indifferent quality of sanitation, more especially as to cleanliness of the soil, the Burman nightsoil cess pits and the flies which haunt them, must bulk as factors in the production of infantile mortality."

The cholera mortality in 1905 was high, 6 per mille, the following note is interesting—Three Europeans arrived at a rest house, the durwan was down with 'fever,' really cholera. The water supply was from a well, the sick durwan in the early part of his illness attended on the three officers—one officer used condensed milk and escaped, the others used local fresh milk and were attacked and both died.

The need of a trained subordinate staff of Sanitary Inspectors is emphasised in the Report, and it is satisfactory to learn that the Local Government have asked for the submission of a scheme for their appointment.

"It is hopeless," writes Col. King, "to judge of the malarious character of the localities concerned by taking note of the number of deaths reported from fever."

In one place, Kyaukpada, there were, in the dry season, over 88 per cent of children with enormously enlarged spleens, and Lieut. Whitmore, I.M.S., found an endemic index of 8 per cent.

"Of the deadliness of malarial infection in Burma there can be no doubt, as testified to more especially by wicked constabulations of the Military Police who are called upon to hold numerous outposts. Fortunately, in reference to cheap prices of land and the scattered residences of the people, it may be financially possible in this Province to press for radical measures contrasted with palliative anti-malarial measures. Here I would remark that by the former term, I would imply all those measures directed to the correct removal of surface water and the regulation of subsoil water that can be effected by change of physical conditions by engineering methods, whilst palliative measures I would regard as embracing the use of mosquito brigades. Of the importance of undertaking radical measures against malaria there is every indication of the earnestness of the Government of Burma, and I have every hope as soon as schemes can be elaborated, work will be actually accomplished. In the meantime, Government has sanctioned a scheme for the draining of the marshes immediately surrounding Myingyo, by which it is hoped there will be effected not only the financial result of placing land at disposal for building sites, but also of eradicating pools where at the present time mopheles flourish, and which so far as the native population is concerned in the pits near the marshes, serve to transmit malarial fevers."

"Mosquito brigades worked during the year at Myitkyina, Kyaukpada and Akyab, with the results that we held to have brought about decrease of malarial fevers. This decline, however, has been so slight that it is impossible to precisely state to what extent the general fall of malarial fevers in Lower Burma during the year was not operative. In Amherst, it is noteworthy that whilst it was possible to record a decline of malarial fevers owing to operation of a mosquito brigade four years ago, following abandonment of work by it, there has been an increase of fever."

"The policy of distributing quinine has met with a fair grade of success as shown by the fact that a total of 6,996 packets were sold during the year by the following agencies—

	Packets
By Post Offices	1,544
By District Officers	2,177
By Vaccinators	3,274
	6,996

"Towards the end of the year, arrangements were made to give effect to the recommendation of the Government of India that the total quinine per packet should be raised from 5 to 7 grains."

"There is no want of belief by the Burman as to the efficacy of quinine, but he regards a medicine so remarkably bitter as an undesirable penance consequently, various officers have urged that the Post Office quinine should be available in the form of tablets. This matter is still under the consideration of Government. In the meantime, large quantities of tablets are being purchased in the bazaars, chiefly from American sources. It is presumed they contain quinine but they are apparently as insoluble as the wooden nutmegs of similar legendary origin, as the Medical Officer at Mogoke reports that a patient was relieved of 95 of these after an enema. It may be mentioned that quinine is regularly issued as a prophylactic by Medical Officers in charge of Jails and of the Military Police with good results."

The following remarks by Col King on plague measures may be quoted—

"In the matter of spread of plague, I think theories have undergone a certain amount of spasmodic popularity. For example, on the first appearance of plague in India enthusiasts as to inoculation insisted upon this as the only available remedy, whilst latterly the killing of rats has received a great impetus following the persevering work of Captain Liston, I.M.S. Personally I am no believer in a vaccine. I accepted inoculation from the date of introduction as a valuable aid whilst I have always advised the killing of rats as a part of the programme against plague and specially urged this as a precautionary measure *in advance of plague*, on the very simple principle of opposing the spread of the microbe by all available means. On the other hand, I deplore the present "booming" of rat killing to the forgetting of plague infected clothing and bubo "dressings," excreta of toxic cases, pneumonic sputa saliva of submental bubo cases and the like, or regarding the infected flea as the sole possible cause of the spread of the disease, in the presence of the well known fact that the mucus of the mouth of the rat, its blood and excreta may be crowded with bacilli and that articles may be contaminated thereby—even if their vitality be brief. In my opinion, it is the duty of the sanitarian to keep in mind all possible modes of spread of the disease brought about by the scattering of the microbe, and to devise not one method but a complete system possessed of interdependent parts for its circumvention and destruction holding in mind the facts that of susceptible animals man is capable of the longest *voluntary* transport during the period of incubation, and therefore he is the chief agent for spread of the disease from infected centres to distant uninfected centres, that rats necessarily are important because uncontrollable agents in the transmission of disease when they have become infected (usually as a result of importation of the disease by man) but that happily, unlike man, their habits are such as prevent the area of their influence being widespread. I make these remarks lest it be thought that I undervalue the importance of killing the rat population, but as I have seen the case of Rangoon quoted in Indian newspapers as an instance in support of the theory that it suffices to kill rats and abide by the result as a sufficient policy in plague treatment I would state that far from plague having disappeared from Rangoon at the end of three months as commonly believed, as a result of slaughter of rats, it has, as already stated, never left the limits of the Municipality throughout the year. When it was popularly accepted that, at the end of three months, plague had been exterminated in Rangoon as the sequence of rat killing, as a fact only a total of 77,894 rats had been killed. At the end of 1905, a total of 183,438 rats, or considerably less than one per head of the human population of the city, have been killed. Throughout the period, a record of infected rats has been maintained. Without entering into details which would here occupy too much space, I think it may be safely said, judging by the somewhat faulty statistics available, that whilst rat infection and human infection undoubtedly coincided, they were by no means concurrent with the same intensity in different areas of the town."

III

EASTERN BENGAL AND ASSAM

This is the first report for the New Province, by its first Sanitary Commissioner, Major E. O. Hare, I.M.S. The

registered population is close on 30 millions. As in the old Assam Sanitary Reports, the following very useful tables have been compiled and enable us to compare the recorded birth and death rates of all the Provinces of India,

PROVINCE	BIRTH RATE PER MILE		
	1899 1903	1904	1905
1	2	3	4
Eastern Bengal and Assam	38 80	41 68	39 37
Bengal	38 60	42 59	39 55
Central Provinces	41 95	53 19	51 02
Madras	29 50	30 70	32 00
Burma	34 25	32 71	34 34
Bombay	30 77	35 09	33 07
United Provinces	44 35	46 67	41 24
Punjab	41 40	41 50	44 40
North Western Frontier Province	31 90	34 93	35 35

PROVINCE	DEATH RATE PER MILE		
	1899 1903	1904	1905
1	2	3	4
Eastern Bengal and Assam	31 48	32 11	35 06
Bengal	32 72	32 45	38 53
Central Provinces	37 43	32 06	37 21
Madras	21 40	22 50	21 40
Burma	24 11	22 36	24 93
Bombay	45 23	41 39	31 84
United Provinces	33 50	34 70	44 00
Punjab	40 70	49 10	47 60
North Western Frontier Province	24 20	28 56	26 79

Registration is very defective in most towns and districts. The infantile mortality is put down as 203 per mille of live births registered which, though high, is less than in Bengal, Bombay, Punjab or United Provinces. As regards the value of the inspections of registration by the vaccinating inspectors, the following remark is sufficient to quote—

"In the Bengal districts, Rayshahi reports the highest percentage of error detected, 39 per cent births and 419 per cent deaths and at the other end of the list is Faridpur, where 18,952 enquiries made into the registration of births revealed no mistake at all, and 12,694 enquiries into recorded deaths revealed only one single error."

Cholera was bad in 1905 and the provincial death rate, 47, was more than double that of the 10 year average.

"In five districts the epidemic during the months of October, November and December was sufficiently severe to interfere with business. In places the villagers were unable to dispose of their dead by ordinary means, and either threw the bodies into the rivers to be carried away by the flood, or left them to rot on the surface of the ground. In some cases there was a history of the disease spreading from village to village along the course of the streams and rivers, especially where the people rely on the river water for house hold use. It is interesting to note that in the city of Dacca, the Civil Surgeon dealt successfully with an outbreak, by treating the wells and tanks in the affected neighbourhood with permanganate of potash. The disease was brought under control almost immediately the treatment was applied."

The Sanitary Commissioner gives a good synopsis of Capt S. P. James' *Memoir on Kala azar*, but we would not lay much stress on the imaginary discovery of bodies like Leishman Donovan bodies in oriental sore. Some one reported similar bodies found in cases of other skin diseases, but as these bodies have not been cultivated, to compare them with the Leishman Donovan body is waste of time.

The new Province reported only 6 deaths from plague in the year 1905. What a contrast with other parts of India! The immunity from plague of Eastern Bengal and Assam is a subject which has not yet been seriously taken up, it is possible that it might throw much light on the way plague is spread.

THE I M S AND THE ARMY LIST

To the Editor of "THE INDIAN MEDICAL GAZETTE"
SIR,—I for one very heartily concur in Captain Witter's suggestions, and all the I M S men I have met recently are of the same opinion.
It is high time that the I M S received the recognition that is its due, and its date of origin and a brief abstract of its history most certainly should find their places in the Army List. Our date is older than most regiments in the Native Army.
An official badge is much needed to relieve the vast blank expanse on collar and helmet and to serve as a distinguishing mark.
Cannot some one of influence be persuaded to take this matter up and put it before the proper authorities? Also the other matter of horse transport allowance, than which there is nothing more unjust, ought to be brought forward and very strongly pressed, so that a definite answer may be obtained whether the I M S are mounted or unmounted.
Who is energetic, willing, and strong enough to champion these causes?

AGRA, U P
18th November, 1906 }

I am Sir,
Your obedient servant,
HUGH R DUTTON,
CAPT, I M S

THE GRIEVANCES OF HOSPITAL ASSISTANTS

To the Editor of "THE INDIAN MEDICAL GAZETTE"
SIR,—I shall be much obliged if you will publish the following appeal—
"An appeal to the Members of the Indian Medical Service on behalf of Hospital Assistants"

"RESPECTED SIR,—As belonging to and constituting the distinguished body of His Majesty's servants entrusted with the work of propagating medical help and relief amongst His Majesty's subjects in India, it is your duty, I humbly beg to submit, in the interests of justice as well as the efficiency of the department entrusted to your care, to take into your serious consideration the following appeal on behalf of a class of hard worked medical subordinates known as Hospital Assistants."

The origin of this class of Hospital Assistants can be traced back towards the end of the first half of the last century, when members of the Service, to which you have the privilege to belong, conceived the idea of giving some crude scientific instruction to compounders and dressers serving under them. In the first place this was given in the vernacular and was of an elementary nature. As time went on, this practice gradually developed into a regular training of Hospital Assistants and to undergo a full course of practical and theoretical training. From the time of entrance to that of leaving the school, we have to satisfy many rigid tests imposed on us. The products of such a course of instruction are of course now justly entrusted with a responsible work. All over India, Hospital Assistants are satisfactorily managing the dispensaries and doing their work in all other branches of the department that much of the efficiency and usefulness of a philanthropic generosity depends on the zeal and energy displayed by Hospital Assistants.

The difference between the qualifications of this class then and now is of course plain to you. You are also aware of the onerous and responsible work we are often called upon to perform in times of epidemics. For the sake of justice and status, I humbly urge, bound to consider whether there has been a corresponding improvement in our pay, prospects and salary. Apart from the nature of work, the cost of living has enormously increased, and yet Hospital Assistants are required to do any medical work at any place upon the same salary as before. For years together they have been putting their case before the Government, and I hope you agree with us in thinking that it is high time that all hands that we are a hard worked class of public servants. We humbly pray that Government should encourage this hard worked class of servants by bettering their prospects.

"Besides, if you will compare the pay, prospects and the work of this class with those of any other class of subordinate public servants, you will have, I believe, to admit that great injustice is being done to Hospital Assistants. Veterinary

Assistants, belonging to a sister department and far inferior in qualifications to Hospital Assistants, are much better off in respect of pay and prospects. A Hospital Assistant can never aspire to more than Rs 70 per mensem, no matter how long and meritorious his services. I appeal to your sense of justice and humbly request you to kindly take up our case and see that justice is done to our priors. As belonging to our department you are expected to take particular interest in the welfare of your subordinates like Hospital Assistants who have been working faithfully under you so long.

"As a sign of the times, there has come into existence a Journal entitled the 'Hospital Assistant', specially devoted to the interests of this class. I may humbly state that I have the honour to be its Editor and Proprietor, and as such, I wish to urge that you are expected to encourage this humble effort at self culture made by Hospital Assistants. The birth of this Journal also indicates that, all over India, Hospital Assistants have become conscious of their present condition and feel their grievances considerably.

"Under such circumstances, it devolves upon you as our superior authorities to move the Government in this matter. The Hospital Assistants in all parts of India have now clearly placed their case before the Government and it only remains for you to raise your powerful voice on behalf of your loyal and so long neglected subordinates.

"I trust my appeal will not go in vain.

"Dated 15th November, 1906
'Hospital Assistant' Office
GUNGAL VESH, KOLHAIUR
CITY, S M C (INDIA)

"I beg to remain,
Respected Sirs,
Your most obedient servant,
RAGHUNATH VAMAN BAPAT"

RECTAL INJECTIONS OF FRESH BILE IN TROPICAL DYSENTERY

To the Editor of "THE INDIAN MEDICAL GAZETTE"
SIR,—I have lately practised what I believe to be a new treatment for dysentery with considerable success. It consists of the introduction of fresh bile per rectum.
Several reasons led me to give the treatment a trial, viz—
I have noticed that as a rule dysenteric cases are on the way to recovery when bile reappears in the stools.
At more or less lengthy intervals between the characteristic dysenteric motions, a hard, whitish stool makes its appearance, the colour of which indicates an almost total absence of bile products.
My post mortem examinations have shown that in nearly every case the portion of the bowel chiefly affected was from 12"—14' of the lower end of the colon.
The fact that in my experience minute doses of calomel have a decidedly beneficial influence on the course of the disease (presumably on account of the cholagogue action of the drug), led me to suppose that a much more rapid result would be obtained by injecting bile directly over the affected area.
In practice I have used the bile obtained from freshly-killed sheep, pigs bile being unobtainable. It was mixed with olive oil in the proportion of two parts of bile to one of oil. From 1½ oz to 2 oz were introduced through a tube 12" in length.
The results of this simple treatment were everything that could be desired. In every case one injection was sufficient to cause an alteration for the better in the character of the stools, two or three being generally sufficient to effect a cure. Untoward sequelae were never observed.
My colleague, Dr F Hall Wright has given the treatment a trial with equally satisfactory results.

MADRAS,
26th October, 1906 }

Faithfully yours,
ALFRED H CONDER, M R C S,
SURGEON,
Natal Government Emigration Service

WHAT IS SATURATED STEAM

To the Editor of "THE INDIAN MEDICAL GAZETTE"
SIR,—Can you inform me what is meant by the expression "saturated steam" as used in descriptions of disinfection apparatus?

September, 1906

[We were fortunate in finding in the *Sanitary Record* a full answer to the above query—which is as follows—
"(b) When water is heated under ordinary atmospheric pressure it boils at 212 deg Fahr, but when the pressure is increased it does not boil until a higher temperature is reached, the exact temperature of ebullition depending on the pressure employed. When the temperature comes ponds to the pressure, steam is said to be 'saturated,' for

You etc
HYGIENE

the least cooling below this temperature will cause condensation. When, however, steam is heated to a temperature above that corresponding to the pressure at which it exists, it is said to be "superheated." "Saturated" steam has, therefore, a temperature very slightly above that at which it has been generated, if it be further heated it becomes "superheated." Superheated steam may be obtained by heating water containing calcium chloride, this salt raises the temperature at which steam forms under ordinary atmospheric pressure, so that the temperature at which it exists no longer corresponds to the pressure. The same result is obtained when saturated steam is heated in a stove by a jacket containing steam at a higher temperature, the temperature of the steam in the inner chamber rises above that corresponding to the pressure at which it exists. Again, steam in the saturated or superheated condition may be confined in a closed chamber, or it may be used in motion, viz., as "current" steam. It may also be employed in the confined or current condition at the ordinary atmospheric pressure, or at a pressure higher than that of the atmosphere. There has been much diversity of opinion as to the best way of using steam for purposes of disinfection, viz., as to whether it should be saturated or superheated, confined or current, with or without pressure"—*Ed., I M G*

AN ABNORMAL ORIGIN OF THE PECTORALIS MAJOR

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The following case is of interest —

X, a Hindu male, age 25, sent to hospital on account of injuries which were trivial. When I first saw this man I was struck by the peculiar flattening of one side of his chest. On a closer examination I found as follows —

On the left side—a normal chest, on the right side—no pectoral eminence below 3rd rib—the anterior fold of the axilla ran across the chest in almost a straight line on a level with 3rd rib. Below this level the ribs were merely covered by integument. Thus the origin of the pectoral muscle in this case seemed to be from the cartilages of the 1st, 2nd and 3rd ribs instead of from those of all the true ribs and the aponeurosis of the oblique. The insertion of the muscle was normal. Measurement detected a difference of one inch between the R and L halves of the chest on a level with 4th rib. R. half Dec 16. L. half Dec 17. There seemed to be no loss of power on affected side in spite of the deformity. The man was right handed.

The Pectoralis Minor in its turn did not appear to arise from 4th and 5th ribs since these ribs as stated above were merely covered by integument. It probably was in its turn much atrophied and possibly arose by one insertion from 3rd rib. The man stated definitely that he was born with this defect. The case seems to me to be worthy of record.

GUDDALORT

A CHALMERS
CAPTAIN, I M S

THE HYPODERMIC USE OF QUININE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—Can any of your readers kindly give me a recipe for preparing a solution of quinine for hypodermic use, for cases of malarial fever and enlarged spleen?

Can a safe hypodermic solution be prepared from the ordinary sulphate of quinine, B P, when the neutral sulphate cannot be readily obtained? Which salt is best suited for this purpose?

Yours truly
R S

[Will some of our readers quote a good prescription?—See a discussion on the hypodermic use of Quinine, *I M G* (Dec 1906) p 495, also this issue, p 12 *supra*—*Ed., I M G*

Service Notes

In the retirement with a good service pension of Lieutenant Colonel L. A. Waddell, M.B., LL.D., C.I.F., C.B., F.R.S., &c., the Indian Medical Service loses a unique personality. Lieutenant Colonel Waddell entered the service over a quarter of a century ago and after serving in military employ came to civil employ Bengal and was posted for some time to the Medical College, Calcutta. While Resident Medical Officer there, under the principalship of Dr. Cortes, he was instrumental in getting set apart a special ward for cholera patients. He soon passed into the Sanitary Department, and for a long time was a Deputy Sanitary Commissioner for Ben-

gal, and was considered by some as having a good claim to the higher appointment on the retirement of Dr. W. Giegg. He also officiated in 1884 as Chemical Examiner to Government in Bengal, and with the late Surgeon Major Warden did some very good original work on the pharmacology and chemistry of Indian drugs and especially he made some memorable observations on snake venom. He also elaborated the forms of report and the analytical tables which are still used by his successors in the Chair of Chemistry.

While a Deputy Sanitary Commissioner he had much to do with the establishment of the well known Vaccine Depot at Ghoom Darjeeling. He also travelled much in Darjeeling District and the Sikkim Hills and embodied his experience in that charming book of travel entitled *Among the Himalayas*, a book which has been considered by good critics as likely to be a classic, as Hooker's celebrated book on the Himalayas of a generation before.

In 1896 he rejoined the Chemical Department, and held this post till he left Bengal in 1899. Since then he has acted as P. M. O. with the Indian contingent in China, and more recently as P. M. O. and Archaeologist with the Tibet Mission which unveiled Lhasa the mysterious. For the China Expedition he received the C.I.E., and for Tibet the C.B. He went home on medical certificate after the Tibet Expedition, and more recently he has been appointed a lecturer on the Tibetan language in London.

The above sketch of a remarkable career does not do justice to the many-sidedness of Colonel Waddell. He was on two occasions the editor of the *Indian Medical Gazette* and worked hard to improve it. He was a prominent member of the Asiatic Society of Bengal, and a list of all his contributions to this and other learned societies on natural history, anthropology, philology, geography, geology and archaeology would occupy much of our space.

Many of his collected curios and objects of interest he has presented to the British and other Museums in England and in India. Colonel Waddell is well known as an eminent Buddhist scholar, and his book on the Lamaism of Tibet is already a classic. His researches into the site of the ancient Patliputra around Patna, and his share in the discovery of the birthplace of Buddha are well known to scholars. It has been his good fortune as a Buddhist scholar to have been able to visit Buddhist remains and countries, so far apart as Ceylon, Lhasa and China. His book on Lhasa has already run into its third edition, and of the many books published on this country and the recent mission, it is recognized to be the most authoritative and interesting.

In another line he also scored a success. His edition of Lyon's Medical Jurisprudence has been a great success and already he has been asked to bring out another edition of this work.

We wish Colonel Waddell many years of peace and quietness in retirement. He is a product that no other Medical Service could produce, and whether as a military medical officer, a servant or a chemical expert he has always distinguished himself.

MAJOR R. BIRD, F.R.C.S., C.I.F., I.M.S., Officiating Professor of Surgery Calcutta, has joined the staff in attendance on H. H. The Amir of Afghanistan on his visit to India in January, February. Major L. O. Kinnery, I.M.S., officiates for Major Bird and Captain Clayton Lane M.D., I.M.S., stays on for the present as Civil Surgeon, Darjeeling.

CAPTAIN J. H. HORTON, D.S.O., I.M.S., is granted four months' extension of leave.

THE following correspondence is of great importance —

No. 746, dated Simla, the 30th August 1906

From—J. C. Fergusson, Esq., Under Secretary to the Government of India, Home Department,

To—The Secretary to the Government of Bengal, Municipal (Medical) Department

IN continuation of the Home Department letter No. 1045, dated the 20th September 1905, I am directed to forward for information a copy of the despatches from the Secretary of State regarding the rates of pay admissible to military officers in civil employ while on study leave.

No. 87 Finl, dated India Office, London, the 21st July 1905

From—St. John Brodick, Esq., His Majesty's Secretary of State for India,

To—His Excellency the Right Hon'ble the Governor General of India in Council

I FORWARD for your consideration copy of a letter from Captain J. S., I.M.S. inquiring as to the rate of leave pay admissible to him during his study leave.

2 Under Article 314 of the Civil Service Regulations, Captain S is entitled, during so much of his ordinary furlough as was earned under civil rules (i.e., for the first seven months and 15 days) to half average salary subject to a minimum which, in his case, is his last salary, viz., Rs 550 a month, but during the remainder of his ordinary furlough he will only draw the rate of leave pay admissible under military rules, i.e., £300 a year.

3 Captain S asks that for the whole of his study leave he may receive furlough pay at the more favourable rate applicable to that portion of his ordinary furlough which was earned by service under the civil rules. It appears to me that, as study leave is "extra furlough," calculated at the rate of one month for each year of an officer's service, the right course is to allow an officer in civil employ who is on study leave to receive furlough pay at the civil rate for a portion thereof equal to one twelfth of his service under civil rules, and at the military rate for the remainder.

4 Should you see no objections, I should be prepared to make an addition in this sense to the regulations for study leave, and to deal with Captain S's case accordingly on being furnished with the necessary particulars of his service.

5 I shall be glad to have your opinion on the question as soon as possible.

Dated the 26th June 1905

From—Captain J S, I M S,

To—The Under Secretary of State for India

I HAVE the honour to address you with regard to my furlough pay, under the following circumstances—

Having not been permanently in the civil employ for very long, my furlough pay till a date in next month is payable at civil rates, that is, approximately £500 a year and after that at military rates, or £300 a year.

I am at present, however, enjoying a period of study leave, to which my furlough has been commuted by the India Office since my return to England. I understand that the rates of pay on study leave (apart from all question of allowances) are the furlough rates to which the officer is entitled at the time he takes the leave.

I would point out that the enjoyment of study leave leaves untouched the amount of furlough earned in India, whether earned in civil or military employ and that, therefore, my furlough with pay at civil rates will fall to me at the conclusion of my study leave.

Under these circumstances I would request from you authority to continue my present rate of furlough pay till such time as my furlough earned under the civil rules, and exclusive of study leave, shall have been exhausted.

Despatch from His Majesty's Secretary of State for India,
No 71 Fmt, dated the 29th June 1906 received on
the 15th July 1906, and enclosure

I FORWARD a copy of a letter from Captain S P J, Indian Medical Service, who has been granted study leave for nine months in combination with three months' privilege leave. The officer's leave and pay certificate shows him as entitled to leave allowances at the civil minimum rate of £500 per annum for a period of four months and 20 days, representing the portion of his study leave earned by service under civil rules, and to half average salary for the remainder. This treatment of his study leave is evidently based upon a literal interpretation of paragraph 3 of my predecessor's Financial Despatch No 87 of 21st July 1905, but the object of that Despatch was to enable a military officer in civil employ to receive the civil rate of pay for a certain period of study leave taken when no ordinary furlough is due to him carrying the civil rate of pay. It was not intended to prevent an officer to whom furlough carrying pay at the civil rate is due from enjoying the advantage of that rate during study leave, since to do so would place him in a worse position during study leave than during ordinary furlough.

2 In order to carry out the intention with which the Despatch of 21st July 1905 was written, I have decided that the following rule shall be inserted in the regulations regarding the grant of study leave—

"An officer in civil employ will be entitled to draw furlough pay at civil rates for a portion of his study leave equal to one twelfth of his service under civil rules, and for the remainder either (1) at the military rate, or (2) if furlough is due to him under civil rules, at the rate admissible under those rules, in the latter case a corresponding portion of the ordinary furlough earned under civil rules which is at his credit will be treated as if it had been earned under military rules."

3 I request that instructions may be given for the last pay certificates of officers proceeding home on study leave to be made out in accordance with this ruling, which will

apply to civil veterinary officers as well as to those of the Indian Medical Service. Captain J's case, and any similar ones which may occur will be treated accordingly.

4 It is a question for consideration whether, in view of the nature of study leave and the objects for which it is granted, it should not be excluded from account in reckoning the aggregate amount of furlough taken by an officer of the Indian Medical Service, or of the Civil Veterinary Department, towards the maximum period of six years admissible under Article 299 of the Civil Service Regulations. I shall be glad to have your opinion on this point.

Dated 13, Bohingbroke Grove, Wandsworth Common, London,
S W, the 10th May 1906

From—Captain S P J, I M S,

To—The Under Secretary of State for India

I HAVE the honour to bring to your notice, for favour of such action as may be deemed necessary, the following statement regarding the pay to which I am entitled while on leave from India—

Before my departure from India on the leave granted to me, viz., three months' privilege leave and nine months' study leave, I understood that during the period of nine months' study leave I should be entitled to receive pay at the rate of £500 a year, which is the rate to which I am entitled while on ordinary furlough, together with the usual lodging allowance sanctioned for officers of my rank, and in this belief I made out a plan of study the carrying out of which would involve me in considerable expense. But after my arrival in England I received from the Comptroller of India Treasuries my last pay certificate, from which it appears that, while I am entitled to the lodging allowance during the whole nine months of study leave I am entitled to receive pay at the rate of £500 a year during only four months and 20 days of this leave and that during the remainder I am entitled to receive pay at the rate of only Rs 427 13 per month. The reason for this is stated in the enclosed letter from the Comptroller of India Treasuries, and I respectfully submit that, if the ruling quoted by the Comptroller is applicable in my case, I shall receive from all sources during nearly half the period of my study leave, less pay than I should receive if I had taken ordinary furlough. The hardship is the greater because if I had taken my leave during the period referred to as ordinary furlough instead of as study leave, I should not only have been entitled to receive a larger sum of money (because pay at the rate of £500 a year amounts to more per month than does the sum of my military rate of pay and the lodging allowance), but I should have been free from the considerable expenses connected with the courses of instruction necessary for the carrying out of the plan of study which was approved when my leave was granted.

In these circumstances I have the honour respectfully to request that I may be granted the civil rate of furlough pay (viz., £500 a year) together with the usual lodging allowance during the whole of my nine months' study leave, and that, in the event of this being impossible, such portion of my period of study leave, as remains after the first four months and 20 days are completed, may be converted into leave on ordinary furlough.

IN supersession of the orders* it is notified that the appointment of an officer of the British Service or Indian Army, or of a Volunteer Corps, as Honorary Aide de Camp to His Excellency the Viceroy, and of an officer of the Army Medical Staff, Royal Army Medical Corps, or Indian Medical Service, as Honorary Surgeon to His Excellency, will in future terminate on the departure from India of the Viceroy who makes the appointment, unless it ceases earlier on the holder's retirement from the service, his promotion to Major General, or in the case of an officer of the Army Medical Staff or Royal Army Medical Corps, at the conclusion of his tour of service in this country.

The rules governing the appointment of native officers as Honorary Aides de Camp to His Excellency the Viceroy will remain as heretofore.

PAY AND ALLOWANCES—The Government of India have been pleased to decide that every officer appointed by due authority to officiate in a command or staff privilege leave vacancy—caused by the grant to the permanent incumbent of combined leave, or otherwise—or in a chain of arrangements consequent thereon shall, for purposes of staff pay or command allowance, be treated as if himself on privilege leave, and will accordingly be held entitled during such period to

* Clause 2, India Army Circulars, dated 1st January, 1891

Clause 57, India Army Circulars dated 1st April 1897 as modified by clause 22, India Army Circulars dated 1st February, 1898

† Army Department Letter No 612—A, dated 24th October 1906

the full staff pay or command allowance (if any) of his own permanent appointment

II—The operation of this ruling will not, however, be held to prejudice the grant to the officiating officers of privilege leave during the same year, or their completion of the thirty three months required by Army Regulations, India, Volume II, paragraph 221, towards the accumulation of ninety days' privilege leave

III—This ruling will be held to have come into operation from the 15th February, 1905

LAST PAY CERTIFICATES—It has been brought to notice that in many instances the issue of final last pay certificates has been delayed owing to officers furnishing the Pay Examiner with incomplete information in the forms referred to in India Army Order No 539 of 1903, and when called upon by the Pay Examiner to supply the omissions or rectify inaccuracies, the calls have not been attended to with promptitude

2 All correspondence in connection with last pay certificates should be treated as urgent and all officers concerned are directed to ensure the submission of the forms referred to, in proper time

3 In cases in which an officer desires final settlement at the port of embarkation his ordinary or regimental last pay certificate should, in future, be forwarded to the Pay Examiner with an intimation to that effect to enable the Pay Examiner to countersign the last pay certificate and return it to the officer concerned

We understand that one "extra" pension during the current year is in danger of lapsing as no one has come forward to retire and claim it. Colonel Waddell got one of the two vacant pensions

We quote the following from a recent issue of the *British Medical Journal*. We fancy it represents the views of a very large number of I M S men—

"A Regimental Medical Officer writes I do not think 'Fed Up's' letter in your issue of August 25th ought to go unchallenged, not from the point of view of his condemnation of the new order with which most medical officers agree, as being, if not unworkable, at any rate not economical, but his advocacy of the station hospitals system as an alternative is not warranted. The station hospitals for British troops in this country are no more efficiently equipped for their purpose than are native regimental hospitals, they are only supplied with extra articles incident to the difference in mode of living of the British and native soldier, and the only extra drug supplied is opium. As a matter of fact the present system in native hospitals, whereby the medical officer can purchase locally any drugs required up to an ample margin is quite satisfactory

Secondly, as regards economy in general. In this station the number of British and native troops is about equal, but four British officers, four assistant surgeons, and a writer form the establishment of the station hospital, while two British officers, and four hospital assistants are allowed for the native troops, and the latter would not be found sufficient for a station hospital, although ample with the regimental system

Lastly, the popularity of the station hospital. The question has frequently been raised and officer commanders of regiments from the point of view of the native soldier have condemned it in no unmeasured terms and with singular unanimity, and this cannot be lightly ignored

From the point of view of the Indian Medical Service officer, it would render military service most unpopular, as the vast majority in permanent military employ are quite content with the present system, otherwise what is the advantage of the military Indian Medical Service over the Royal Army Medical Corps of which there is convincing proof under existing conditions, for it is next to impossible for a Royal Army Medical Corps man to exchange to the Indian Medical Service nowadays. The majority of Indian Medical Service men who advocate the change are either men going to civil employ and who are therefore not really concerned, and a certain number of senior men who object to serve under a commanding officer who may be then junior. I maintain that this is not a legitimate complaint, as the same thing constantly happens in other branches of the services—for instance, commanding officers of regiments under brigadiers years junior to them in service. Moreover, the officer commanding of a regiment, whatever rank he may have, represents a lieutenant colonel and the supreme authority of the unit, and apart from the officer commanding it will be found in most native regiments that the medical officer's rank is always strictly observed

The fact is that, with the increase of medical knowledge and requirements, efficiency can only be maintained by corresponding increase of expenditure, as is found in other scientific branches of the service, and the necessary economy required to meet that expenditure, will not be produced through bringing in the station hospital system, rather let

Government grant for more modern equipment a tenth of the sum required to build station hospitals, and the military Indian Medical Service will be the most efficient medical service in the world"

ON relinquishing charge of the duties of Civil Surgeon of Muree, Captain D H F Cowin, I M S, was appointed to officiate as Civil Surgeon of Jhelum and assumed charge of his duties on the forenoon of the 1st November 1906, relieving Captain N Scott I M S, of the collateral charge

WITH reference to the notification of the Government of India in the Home Department, No 803, dated the 12th of October 1906, Captain C W F Melville, M B, I M S, assumed charge of his duties as officiating Professor of Materia Medica and Pathology, Medical College, Lahore, on the forenoon of the 15th of October 1906, *vice* Major H G Melville, M B, I M S, proceeded on leave

CAPTAIN W O S MORPHY, I M S, is appointed Health Officer at Perim, in respect of pilgrim ships which touch at that port

CAPTAIN A G SFRGENT, I M S, is appointed to act as Civil Surgeon, Kurwar

ON forenoon, 20th October 1906, Captain G Tate, I M S, took over from Lieutenant J F Boyd I M S, the Civil Medical duties of Kohat District

HIS Excellency the Viceroy has sanctioned the following appointments and transfers of medical officers under the Foreign Department—Major H L Drake Brockman, I M S, who returns from leave at the beginning of November, was posted as Residency Surgeon in the Western States of Rajputana

Lieutenant-Colonel P D Poul on returning to duty in November, was posted as Residency Surgeon, Jampur, relieving Lieutenant-Colonel H B Robinson who has resumed his former charge, as Agency Surgeon, Bikaner

Major A L Duke, on relief by Lieutenant-Colonel Robinson, will be posted temporarily as Residency Surgeon, Bangalore, during the absence on privilege leave of Captain R Standage

Major T W Irvine, I M S, has been posted on return from leave in November, as Senior Surgeon *ex officio*, Sanitary Commissioner, Mysore

Lieutenant Colonel D F Ffrench Mullen, I M S, will proceed on leave on the termination in November of his present officiating incumbency of the post of Principal Medical Officer, Sirhind Brigade

In addition to the above postings of medical officers of the Foreign Department, the following have been arranged—

Major P J Lumsden, I M S, is posted as Agency Surgeon, Bhopawar, on his return to duty

Major H Baiden, on relief by Major Lumsden, has been posted as Agency Surgeon in Gilgit, relieving Captain McCarrison, who will then proceed to assume charge of the appointment of Agency Surgeon, Alwar

Major Scott Moncrieff will, when relieved by Captain McCarrison, be posted as Residency Surgeon in Mewar, relieving Major J Fisher, who is posted as Agency Surgeon in the Eastern States of Rajputana, *vice* Major V G Drake Brockman, who is compelled to proceed on medical leave

Lieutenant Colonel A M Crofts, C I E, has returned in December to his appointment of Administrative Medical Officer in the North West Frontier Province, relieving Lieutenant-Colonel G W P Denny, who has reverted to his appointment of Civil Surgeon, Peshawar

Captain Fleming who will be relieved by Lieutenant Colonel Denny, will then be posted as Medical Officer, Tumbhat Hudaidi Consulate, *vice* Captain J W Watson, who has been granted combined leave

Captain L J M Ders, on return from leave in December, returned to his appointment of Residency Surgeon in Gwalior

ON return from leave Lieutenant Colonel S H Henderson I M S, returned to Agra as Superintendent of the Central Prison

MAJOR E JENNINGS, M B, I M S, Superintendent, Central Prison, Bawilly, has obtained two years' combined furlough from 1st November 1906

LIEUTENANT COLONEL A W DAWSON, I M S, resumes civil medical charge of Roorkee

At a luncheon given by the Lord Mayor of Liverpool on Monday last to Professor Ronald Ross, Professor Boyce, and Dr J L Todd, in recognition of the decoration conferred on them by the King of the Belgians for their services in tropical research, Sir Alfred Jones read a letter from King Leopold stating that he had placed the sum of £1,000 at the disposal of the Liverpool School of Tropical Medicine, and holding out the promise of further pecuniary assistance.

MAJOR S H BURNETT, M B, C M, I M S, Superintendent of Mahableshwar in the district of Sátina, is appointed, under section 12 of the Code of Criminal Procedure 1898, to be a Magistrate of the Second Class in that district and is invested with the following additional powers being some of the powers specified in the fourth schedule to the said Code—

Power to make orders prohibiting repetitions of nuisances (section 143)

Power to make orders under section 144

Power to hold inquests (section 174)

Power to take cognizance of offences upon complaint and upon police reports [section 190 (1) (a and b)]

MAJOR BURNETT will exercise the powers with which he is hereby invested within the limits of the Hill Station of Mahableshwar.

CAPTAIN MAXWELL MACKELVIE, I M S, and Lieutenant H Astley Knight, I M S, have passed the examination for fellowship of the Royal College of Surgeons, Edinburgh.

LIEUTENANT COLONEL W H PILGRIM, F R C S, has got an extension of furlough up to first week in February 1907.

SURGEON GENERAL W R BROWN, I M S, C I E, was due back from leave on 4th November 1906.

LIEUTENANT COLONEL W A LEF, I M S, is due from leave (m c) on 26th March 1907.

LIEUTENANT COLONEL W B BROWNING, I M S, C I F, returned to Madras on 10th November 1906.

MAJOR C L WILLIAMS, I M S, has obtained 6 months' combined leave up to 19th March 1907.

MAJOR C DONOVAN, I M S, does not return from leave till June 1907.

MAJOR H ST J FRASER, I M S, has received 9 months' combined leave up till 24th April 1907.

CAPTAIN W J NIBLOCK, I M S, is due back in Madras from leave on 28th February.

CAPTAIN I H SYMONS, I M S, has returned from leave.

CAPTAIN A MILLER, I M S, is due back from leave in May 1907.

CAPTAIN W G RICHARDS, I M S, is acting as P A to the Surgeon General with the Government of Madras.

THE following are appointed Lieutenants, I M S—

Dated 1st February 1906

Harry William Pierpoint, F R C S
Khandu Ganpatiao Gharpurey
William David Henderson Stevenson, M B
Henry Patullo Cook, M B
Percy Strickland Mills, M B
William James Fraser, M B
Desmond Charles Villiers Fitz Gerald
Charles Richard O' Brein, M B
Robert Siggins Kennedy, M B
Bernard Higham
Charles Aubrey Godson
Reginald Henry Lee, M B
Norman Hallibuton Hume, M B
Greer Edmund Malcomson, M D
Patrick Heffernan, M B
William Anderson Mearns, M B
Henry Stewart Hutchison, M B
Duncan Macdonald Cochran Church, M B
Robert George Gibbon Croly, M B
Stanley Trefusis Crump
William Bairbour Alexander Kennedy Cullen, M B
James MacGregor Skinner, M B

ON return from the privilege leave of absence granted to him in notification No 785 dated the 4th of September 1906, Lieutenant Colonel Hendley, I M S, resumed charge of his duties as Civil Surgeon of Lahore, Professor of Midwifery and Forensic Medicine, Lahore Medical College, and Medical Officer in charge of the Government College, Lahore on the forenoon of the 27th of September 1906, relieving Major E V Hugo, I M S.

ON being relieved of the duties of Civil Surgeon, Lahore, Major E V Hugo, I M S, was appointed officiating Civil Surgeon of Lyallpur, where he assumed charge of his duties on the forenoon of the 3rd of October 1906, relieving Assistant-Surgeon Bhariat Chandra Ghosh of the additional charge.

The 22nd October 1906

No 912—APPOINTMENT—On return from leave Major G F W Ewens, I M S, Superintendent, Punjab Lunatic Asylum, resumed charge of his duties at Lahore on the forenoon of the 10th of October 1906, relieving Captain W S J Shaw, I M S.

LIEUTENANT COLONEL W H BURKE, I M S, M B (Dub), is granted combined leave for 6 months and 21 days.

His Excellency the Governor in Council is pleased to make the following appointments, pending further orders—

Captain E F G Tucker, I M S, on relief, to act as Civil Surgeon, Dhárwā.

LIEUTENANT COLONEL R W S LYONS, M D, I M S, on relief, to act as Civil Surgeon, Poona, during the absence on leave of Lieutenant-Colonel W H Burke, M B, I M S.

CAPTAIN A HOOTON, I M S, to hold charge of the office of Civil Surgeon, Poona, in addition to his own duties, from date of departure of Lieutenant-Colonel Burke, I M S, pending arrival of Lieutenant Colonel Lyons, I M S.

LIEUTENANT J F BOYD, I M S, assumed charge of Civil medical duties of Kohat district, relieving Lieutenant W C Gray, I M S.

ON 11th October Lieutenant B E M Newland, I M S, took medical charge of Chitral on 11th October, relieving Lieutenant W S McGilhray, I M S.

MR K V AMIN, L R C P and S (Edin), L F P S (Glas), D P H (Camb), is appointed a 3rd grade Civil Assistant-Surgeon, on probation, in Burma.

MAJOR P W O'GORMAN, I M S, was granted one month's privilege leave from 29th October.

CAPTAIN E C HEPPER, I M S, took civil medical charge of Tochi Valley on 23rd September.

THE services of Captain F D Browne, I M S, are placed at the disposal of the Home Department.

CAPTAIN N R J RAINIER, I M S, Civil Surgeon, who was granted combined leave in Orders No 11688, dated the 6th October 1905, and No 512, dated the 2nd August 1906, was granted, by His Majesty's Secretary of State for India, further study leave from the 1st May to the 15th June 1906, both dates inclusive.

LIEUTENANT COLONEL J L POYNDR, I M S, Civil Surgeon, has been granted, by His Majesty's Secretary of State for India, leave on medical certificate for two months and twenty one days in extension of the combined leave granted him by Order No 5728, dated the 14th May 1906.

PRIVILEGE leave for three months in combination with furlough for nine months and nine days, under Articles 233 (a), 260 and 308 (b) of the Civil Service Regulations, is granted to Lieutenant-Colonel E W Reilly, I M S, Civil Surgeon, with effect from the 9th July 1906.

IN continuation of notification No 702, dated the 6th of August 1906, Major E Wilkinson, I M S, Deputy Sanitary Commissioner, Punjab, has been further permitted by His Majesty's Secretary of State for India, to convert the period from the 1st May to the 31st July 1906, inclusive of the furlough granted to him in notification No 137, dated the 14th of February 1905, into "Study leave."

THE services of Captain W S J Shaw, I M S, are replaced at the disposal of the Government of India, in the Home Department, with effect from the forenoon of the 10th of October, 1906.

MAJOR D T LANE, I M S, Civil Surgeon, Kangra, has obtained privilege leave of absence for three months under Article 260 of the Civil Service Regulations and leave for nine months under the Regulations regarding the grant of study leave to officers of the Indian Medical Service, in continuation thereof, with effect from the 8th of December 1906, or the subsequent date from which he may avail himself of it.

ON being relieved of the duties of Civil Surgeon, Lahore, Lieutenant Colonel H Hendley, I M S, was appointed Civil Surgeon of Karnal, where he assumed charge of his duties on the forenoon of the 22nd of October 1906, relieving Assistant Surgeon Hari Chand.

ASSISTANT SURGEON BHARAT CHANDRA GHOSH, Lyallpur dispensary, was appointed to officiate as Civil Surgeon of Lyallpur in addition to his own duties with effect from the afternoon of the 28th of September 1906, relieving Captain M Coily, I M S.

MAJOR R HAID, M B, I M S (Bengal), Joint Medical Officer of Simla, was granted privilege leave for two months and twenty four days, with effect from the 5th November 1906.

THE services of Captain D Munro, M B, I M S, are placed temporarily at the disposal of the Government of Bengal for employment in the Sanitary Department.

ON return from the privilege leave of absence granted to him in notification No 793, dated the 8th of September 1906, Military Assistant Surgeon E S Brille, Civil Surgeon Jhang, resumed charge of his duties on the afternoon of the 2nd October 1906, relieving Assistant Surgeon Inayat Ullah Nasir.

CAPTAIN H AINSWORTH, I M S, officiating Medical Adviser to the Patna State has obtained privilege leave of absence for three months and furlough for four months in continuation thereof, under Articles 260, 233 (1) and 308 (b) of the Civil Service Regulations, with effect from the 12th of November 1906 or the subsequent date from which he may avail himself of it.

FIRST grade Military Assistant Surgeon J Robertson, Assistant to the Civil Surgeon Nagpur, is recalled from the privilege leave granted him by Order No 1087 dated the 10th October 1906, and is appointed to officiate as Civil Surgeon, Yeotmal, relieving Honorary Captain W J Montgomery, I S M D, retiring.

UNDER Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint 1st grade Military Assistant Surgeon J Robertson officiating Civil Surgeon, Yeotmal, to the executive and medical charge of the Yeotmal District Jail.

FIRST class Military Assistant-Surgeon J A F Harvey, whose services have been placed at the disposal of the Chief Commissioner, Central Provinces, by the Director General, Indian Medical Service is appointed Assistant Surgeon, in charge of the Basim Sub Division of the Akola District.

UNDER Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint 1st grade Military Assistant Surgeon J A F Harvey, Sub Divisional Medical Officer, Basim to the executive and medical charge of the Basim Subdivision Jail.

CORRIGENDUM I M G Dec, p 478, line 16 from below, for 'At the present,' read 'At the present time, &c' Idem p 480, 3rd para, third line, for 'it is not' read 'Is it not?' This in Major Elliot's article on Cataract.

THERAPEUTIC NOTES AND PREPARATIONS

RECENT work by Schraudinn, Metchnikoff and others has directed attention to the spirochete pallida as the probable causal organism of syphilis. Since cultures of this spirochete have not yet been obtained by laboratory methods, its identification has largely rested upon the suitability of the staining reagents employed.

Prominence has been given to Giemsa's method, which has already been recommended for staining malarial blood. The

method requires a mixture of aqueous solutions of eosin and of pure methylene azul. The necessity of preparing two solutions is a disadvantage which has been overcome by the use of 'Soloid' Eosin Azul for Giemsa staining with one solution.

To prepare the solution, dissolve one 'Soloid' product in 5 cc of pure methyl alcohol. A few drops are run on to the film and allowed to remain one or two minutes. Then double the volume of distilled water is dropped on to the film. After another five minutes' staining the film may be washed in distilled water, dried in air, and mounted in xylol balsam.

Nuclear and malarial bodies stain an intense red or violet colour, while the spirochete pallida will be stained a pale reddish purple.

'SOLOID' EOSIN AZUR, 0.015 gm (gr 0.231) is issued in tubes of six (Bouroughs, Wellcome & Co.).

We have received a pamphlet on SAPONARIN, a new Glucoside coloured blue with iodine by George Bazgei, from the Wellcome Physiological Research Laboratories, Herne Hill, London.

Of the many Infants Food on the market, there is none better known and appreciated than the MILO FOOD prepared by the well known firm of Henry Nestlé, of Cannon Street, London. MILO FOOD is made from pure Swiss Milk, and in this connection is strongly recommended. The useful little pamphlet on the "Feeding and Care of Infants", it is well worth perusal.

Messrs SQUIRE & CO have published an addendum to their well known and very complete POCKET PHARMACOPEIA. We are requested to state that medical men can obtain the literature on the use of ANGIER'S EMULSION by application to the Angier Chemical Co., Snow Hill, London, E.C.

We are glad to see that the WATER STERILIZING TABLETS devised by Captain Nesfield, I M S, and prepared by Messrs Smith Stanistreet & Co. are being used for the purification of water in the Ann's Camp.

We are requested to call attention to the fact that Messrs PARKE, DAVIS & CO have opened a large office in Bombay, 31 Hornby Road. Mr N S Rudolf, M Sc, is in charge as General Agent in India.

Our attention has been called to the large number of testimonials in favour of GLYCO HEROIN (Smith) as a remedy for the annoying symptom, Cough, in all its varieties. Glyco Heroin (Smith) is palatable, cheap, immediate in its action, and reliable, and an enormous number of physicians have testified to its reliability and value.

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, The Indian Medical Gazette, c/o Messrs Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co., Calcutta.

Annual Subscriptions to the Indian Medical Gazette, Rs 12, including postage, in India. Rs 14, including postage, abroad.

BOOKS, REPORTS, &c, RECEIVED —

Gordon College, Khartoum, Laboratory Report
The Ajmere Report
The E B and A Police Report
No 28 Bulletin, U S Intestinal Worms
The Report of the Imperial Bacteriologist
Liverpool School Memoir XVI
Appendix to Squire's Pocket Pharmacopoeia
Genito Urinary Diseases, Morton (The F A Davis Co)
Allbutt's System of Medicine, Vol II, New Edition (Macmillan & Co)
Nervous Specialities
Klein's Bacteriology of Oriental Plague (Macmillan & Co)
Adam's Criminal Investigation
Osler's Growth of Truth H Frowde
Agricultural Pedgrees, 1906, 3, 4, 5, 6 and General Index

LETTERS, COMMUNICATIONS, &c RECEIVED FROM —

The Honble Col R D Murray I M S Lucknow Major H Smith, I M S Jullunder Capt O Moses I M S Dhubri, Capt Cornwall, I M S, Madras, Major W J Jennings, I M S, Ahmedabad Major Birdwood, I M S, Agri, Dr Chesky, Bombay Capt Christophers, I M S, Guindy Capt McCay M S Calcutta, The Editor, "Hospital Assistant", Kolhapur, Capt H Dutton, I M S, Agri

Original Articles.

NOTES ON THE DISTRIBUTION OF THE TWO SPECIES OF BED-BUG

By W S PATTON,

CAPTAIN, I M S

THE bed-bug, one of the best known of household insects, belongs to the genus *Cimex* of the family *Cimicidae*, which includes three other genera. Though world-wide in its distribution, and everywhere a hated and loathsome insect, it is somewhat strange that so little is known regarding it. M^r A Aiséne Guault has pointed out that some five hundred odd papers have been written about it, yet it is only within recent times that the important facts in its life-history have been described. There is much yet that has to be studied regarding its life processes, and many erroneous statements need correcting, for instance, in a recent edition of Brauer's well-known book, it is stated the bug can subsist upon moist wood, dust and dirt that collects in crevices, in floors, walls, furniture, etc. This is not so, as anyone can demonstrate for himself. The bug lives on blood alone.

Seeing that we are ignorant of much of its life-history and habits, it is not surprising that the distribution of the two species associated with man are imperfectly known.

Cimex lectularius, L., as is well known, is distributed throughout Europe and North America, it occurs in Suez, Egypt, the Soudan, North-West Frontier Province of India, in China, and probably in Siberia and Japan. I have had specimens of this bug from England, Malta (D^r Zammit), North America (M^r Guault and M^r Strauss), Suez (D^r Russell), Cairo (D^r Phillips), Khartoum (D^r Andrew Balfour), Panchinar, Kurram Valley (Captain Anderson, I M S), Abbottabad (Major C Boule Evans, I M S), Yung P'ing Fu, Chih Province, North China (D^r A K Baxter).

I have not examined any specimens from South America, South Africa, Japan, Australia, or New Zealand.

Cimex macrocephalus, Fieb, the Indian bed-bug, is distributed throughout India, Burma, Assam, Malay, Aden, and the Islands of Mauritius and Reunion. I have examined a very large collection of this species from all parts of India, Burma and Assam sent me by medical officers and others. I have also had specimens from Taiping, Peiak (D^r Fox), Aden (D^r Young), and the Islands of Mauritius and Reunion (D^r L G Barbeau). I have not been able to get specimens from Ceylon, where, according to Green, *Cimex lectularius* occurs.

The bed-bug from the Island of Reunion was described in 1852 by M. Signolet, who named it *Cimex rotundatus*, it is identical with

Cimex macrocephalus, as is also the bed-bug from Mauritius. This bug was probably introduced to the Islands in the fifties or earlier by the Indians, who were imported to work on the extensive sugarcane plantations, for which Mauritius was famous.

Cimex macrocephalus was described by Fieber in 1861, and it has only been known up till recently to occur in Burma. As the name *rotundatus* is more applicable to the Indian bed-bug and by priority belongs to it, I propose renaming it *Cimex rotundatus*, Sign.

A description of this bug will be given later, any further specimens, especially from Cashmere, Tibet or Afghanistan will be welcome. I will also be glad to get bed-bugs from other parts of the world.

I wish to take this opportunity of thanking all who helped me by sending specimens and so settling the above facts as to the distribution of this pest.

THE CARBUNCULAR FORM OF PLAGUE *

By GANENDRA NATH MITTRA, M D (CAL),

Demonstrator in Pathology, Medical College, Calcutta

THE following cases of carbuncular plague are first given, comment on the subject will follow below —

Case No 1—Chilai, Hindu male, aged 33 years, inhabitant of Calcutta, shoe maker by occupation. Admitted 11th March 1902. Discharged 19th April 1902.

Previous history—About three days before admission he observed a pimple at the site of the carbuncle. It had an intense burning and itching sensation, and he accidentally scratched it. The same evening there was a hard swelling about the size of a rupee, which was very red and hot, with a small boil at the site of the original pimple. The next morning the swelling enlarged and around the boil a number of pimples appeared, the intense burning sensation continued. About the evening he felt feverish and there was some general malaise. The next morning he started his work as usual, but he felt some tenderness in his left axilla, though there was no swelling there. In the evening he had slight fever and the tenderness in the axilla increased. The carbuncle by this time attained the diameter of about 1½" and the secondary pimples turned into small boils. Next morning he came to the surgical outdoor department of the Medical College Hospital and was admitted into the general surgical ward for treatment. On admission, there was on the left pectoral region an inflammatory swelling of about 1½" diameter above the nipple, in it a small central opening was observed through which a greyish slough could be seen. Around the central opening there was a number of small yellowish vesicles, some of which had given way and discharged on pressure a thin bloody fluid. The swelling was brawny red—very hot distinctly circumscribed—irregularly oval in shape and seemed to be localised to the skin and subcutaneous tissue. It was firm, did not pit on pressure, but was very tender and painful.

The corresponding glands in the axilla were slightly enlarged and tender, but there was no pain. There was no inflamed area or lymphangitis between the carbuncle and the glands. His general condition was not very bad,

* Derived from a thesis for the M D, Calcutta.

quite sensible, speech not affected. Pulse soft and rather frequent. Admission temperature 99°F.

On suspicion of an ordinary carbuncle it was excised under chloroform. The carbuncle was taken to the bacteriological laboratory where a smear preparation showed it to be a case of plague. Patient was at once transferred to the contagious ward. There was much bleeding from the wound. Next two days, the patient had slight delirium at night, during the day he was well, the temperature rising up to 100°. From 15th March 1905 he was quite well.

The glands subsided under belladonna application. **Bacteriological examination**—Smear preparations from the slough and the contents of the unbroken vesicles showed plague bacilli with the characteristic polar staining. The characteristic dewy translucent growth quite pure was obtained. On slant agar tubes inoculated from the same material after incubation at 37° for 24 hours. The culture showed plague bacilli only under the microscope. Stalactite growth was obtained by inoculating broth with ghee from the tubes and incubating at 37° for six days.

On 12th March 1902—An agar tube was inoculated from the blood of the patient, but it remained sterile.

Case II—Bishweshwar, Hindu male, aged 25 bullock cart driver by occupation, resident of Calcutta. Admitted 2nd April 1902. Discharged 29th April 1902.

Previous history—About four days before admission he had some pain and swelling with a central pimple on the inner side of his right leg. The pimple transformed into a small boil the next day and in the evening he got fever. There was much pain and burning in the boil and he had to pass a sleepless night. The next day he felt some pain in the right groin where gradually a swelling formed. Fever became high and so he came to the hospital and was admitted. Admission temperature, 101.2. The glands on the right groin enlarged and somewhat tender. The general condition was typical of plague with soft and frequent pulse, white furred tongue and thickened peculiar speech.

The lesion on the skin on the inner side of the right leg just below the calf looked like a carbuncle, a big bleb with dark opaque contents in the centre and smaller pustules with similar contents around the central one. The swelling was composed of a dark induration about 1½ inch in diameter and a fainter areola for ½ inch more—solid, not pitting on pressure, very tender and painful (2nd April 1902).

Next day his condition was just the same.

Next day, 4th April 1902, the carbuncle was a little more extensive. The bleb was opened and the contents examined bacteriologically. The smear preparation from the contents of the bleb showed plague bacilli only.

As in the previous case agar tubes were inoculated from the contents of the vesicles which developed pure growths. These were tested for the characteristic stalactite growth, which developed in due time. On suspicion of septicaemia an agar tube was inoculated from the blood of the patient, but remained sterile.

An ordinary surgical dressing with ichthyol was applied.

For the next four days the general condition remained very bad, he was unconscious and delirious at night. From 9th April 1902 he began to improve. The slough had separated, bubo also subsiding.

Temperature came down to normal on 10th April 1902.

On 11th April 1902 the bubo was opened as it was soft and fluctuating.

Discharged cured, 29th April 1902.

Case III—Chunni, H. F., 30, cooly, living at Machhabazar. Admitted 3rd April 1902. Died 7th April 1902.

Previous history—She noticed a papule on the right side of her chest about a fortnight before admission. It had an intense burning and itching sensation. She compared it to ant bite. She

alleged it to be the bite of an ant though she did not notice any biting her.

She did not mind it, the papule remained there with occasional burning and itching, and two days later a pustule appeared at the spot, there was an inflamed red areola around and it began to be very tender. About two days after, the pustule was replaced by a scab. Gradually minute boils made their appearance round the central scab. The inflammatory areola steadily increased accompanied by intense burning and itching. About four days before admission she began to get fever which was not very high, and about this time she noticed a lump in her right axilla which was extremely tender. The fever increased, and she began to feel bad and got herself admitted into the First Surgeon's ward for treatment.

Admission temperature 99.8°F. General condition not very bad. Her look was rather anxious. Answered questions sensibly. Pulse 110 per minute, soft and compressible. Tongue furred and coated whitish.

Local condition—A big swelling on the right side of the chest below the mamma about 3 inches in diameter surrounded by a red areola spreading for 2 inches in all directions. The swelling was hard and indurated—did not pit on pressure. In the centre there was a dark looking slough surrounded by an undermined skin. All round there was a number of vesicles and pustules, some of which had given way showing small dark sloughs. It was very painful and tender with an intense burning sensation. On pressure a thin sanguineous purulent discharge exuded from the central opening and the broken vesicles.

The glands under the anterior fold of axilla were found enlarged and tender. These two seats of infection were connected neither by lymphangitis nor by inflammation of the skin. The case was taken as a case of carbuncle and was being treated with boracic compressor. The patient's condition grew worse—temperature rising 103° to 104° F in the evening, and the central slough assumed a black appearance, so also some of the secondary vesicles. Malignant pustule was suspected, and on 5th April 1902 the carbuncle was excised from the subjacent healthy cellular tissues, the axillary glands were also removed. Smear preparations from the central sloughs showed plague bacilli under the microscope, and the case was transferred to the plague ward. The carbuncle and the glands were taken to the Bacteriological Department. In the evening the patient's temperature did not rise above 100°F. There was much bleeding from the wound, much bleeding from the wound next day also. Had a great flooding in the evening of 6th April 1902, the nurse said she had an abortion. Died at 2.15 A.M., 7th April 1902.

Bacteriological examination—Cultures were made from the gland as well as from the sloughs and the unbroken pustules. The agar tubes inoculated from the glands and the entire peripheral vesicles and pustules showed a pure culture of plague bacilli, while those from the sloughs showed a mixed growth of staphylococci and plague bacilli. The characteristic stalactite growth was further obtained by inoculating broth (with a little ghee on the surface) from the different tubes. The staphylococci were tested for their virulence by inoculating into guinea pigs which did not react.

Agar tube was inoculated from the blood of the patient, but no growth followed.

I may here add that one of the men employed in the laboratory who was charged with the duty of washing the plates soiled with the blood from the tumour and the glands unfortunately got axillary buboes on the fifth day and died on the eleventh day, presenting typical signs of plague.

Case IV—Rahimbux, M. M., cooly by occupation, resident of Calcutta, admitted 17th April 1902, discharged, 17th May 1902.

Previous history—Five days before admission the patient felt a burning sensation on the lower part of

the right side of the chest. The next day a big boil appeared on the part. He got fever the same evening. Next day he noticed a similar boil on the left side of the back. There was much pain and tenderness. The evening before his admission he noticed similar pain and tenderness in the left gluteal region, though there was no boil. The fever was high. He came to the out-patient department where, from the experience of the two cases and from the general condition of the patient, plague was suspected, and the case was admitted into the contagious ward.

Admission temperature, 103°F. General condition bad. Tongue furred white. Speech faltering. Gait staggering. Pulse rather frequent and compressible. Nothing abnormal in the lungs.

Locally—A carbuncular swelling over the junction of the costal cartilage and false ribs. The appearance was typical of carbuncle—a central opening with slough and several smaller openings around. The swelling was 1½ inch in diameter definitely circumscribed, hard and very dark in colour, with a definite areola of lighter tint all round which had no pustules.

Another on the left side of the back about the angle of the scapula, rather smaller but more tender. There was a number of pustules around the central opening. On the gluteal region nothing was observed. The right eye was slightly congested. No glands could be detected anywhere. The diagnosis was confirmed by bacteriological examination.

18th April 1902—Temperature between 101 and 103.6°F. General condition as before.

The carbuncle on the chest wall was very painful, but no more pustules came out, purulent matter and bits of slough coming out of all the openings.

More pustules appeared on the carbuncle on the back, some had given way. A carbuncle developed on the gluteal region where the patient was complaining of burning pain.

19th April 1902—Temperature between 102 and 103.4°F. General condition rather worse. Carbuncles circumscribed, not increasing, discharging sloughs and sticky purulent fluid.

Another carbuncle appeared on the left buttock but this was much smaller than the others. Complained of pain in the perineum where slight cutaneous inflammation was observed.

20th April 1902—Temperature normal in the morning. Carbuncles were better. General condition improved.

Henceforth convalescence began, temperature keeping normal with occasional rise, but never above 100°F. The carbuncles gradually healed. Those on the buttock and the gluteal regions subsided with breaking down of the central pustules and separation of the central slough without any occurrence of secondary pustules. The inflammation in the perineum subsided. The conjunctivitis gave him some trouble. He was transferred to the convalescent ward on 10th May 1902, and discharged on 17th May 1902 as quite cured.

Bacteriological examination—On the day of admission the contents of the vesicles and the sloughs were examined as in the previous cases. In the smear preparation only plague bacilli were found, the agar cultures from the sloughs and the contents of the vesicles showed pure growths of plague bacilli. The staltactite test was positive on 19th April 1902. Tubes were inoculated with the blood of the patient, but no growth occurred.

Remarks—This case was thought to be septicæmic, but the tube inoculated with the blood of the patient remained sterile, the temperature came down, and the general condition of the patient improved with localisation and amelioration of the local lesions. So probably the carbuncles in the different parts of the body were due to ant's infection or simultaneous infection.

Case V—Priyanath, Hindu male, aged 30, clerk by occupation, resident of Howrah.

Patient was seen outside, so the clinical and bacteriological history of the case is not complete.

On 31st March 1903, the patient came to me with a pimple on the right forearm which he said was very itchy, painful and tender. He had slight fever, but he was not at all worse for the complaint, and he attended to his work as usual. He was given an ordinary fever mixture to take, and an ichthyol belladonna ointment for application. The next day the patient had high fever, and the pimple had increased into a big inflammatory swelling about 1½ inches in diameter, very dark and tender, from which red areola spread for an inch all round. At the site of the pimple was a dirty greyish slough. The axillary glands were slightly enlarged and were tender. No track of lymphangitis could be noticed between the carbuncle and the gland. Being suspicious, I took a smear from the sloughs and the pus from a vesicle. The slide on examination showed numerous plague bacilli, and the slide from the slough showed some diplococci in addition.

I failed to make any culture as I could not procure the agar tubes.

The same treatment continued with some stimulants and an ordinary surgical dressing instead of the belladonna ointment.

The slough gradually separated, fever subsided gradually by a week, the wound healed by a fortnight more.

Case VI—Ramlal, H. M., 30, resident of Calcutta, admitted 25th May 1904, discharged 16th June 1904. Admission temperature, 103°F.

General condition on admission was not very bad, quite conscious. Tongue moist and coated white. Pulse soft and very frequent. Speech and gait not at all affected. Complained of some cough.

On examination of the lungs, at the base of the right lung over a small area a few crepitant rales were audible, the breathing was also like tubular (rather bronchial). No definite dullness or any other abnormality could be made out.

On the upper part of the left forearm, there was a number of small purulent blebs on an inflamed area—one was central and rather large, the others were of similar character—smaller and peripherally situated—all were entire. The inflamed area was hard and brawny about 2" in diameter. There was much burning pain in the carbuncle and it was tender. No glands could be detected to be enlarged.

Previous History—Ill for four or five days with fever. The carbuncle started the day previous to the onset of fever as a papule which was very itchy. The next day a boil formed and he got the fever. The inflammation spread and in the course of these three days other boils made their appearance. The cough he had got only the day before admission.

25th May, 1904—Temperature 104°F. The boils were opened and the purulent contents let out. Each of the boils showed a greyish yellow slough at the base. The pus was examined bacteriologically.

26th May, 1904—Temperature between 102° and 103°F. General condition same. No stool. No delirium. The carbuncle extending a little more. Dressings soaked with sanguineo purulent discharge. The condition of the patient gradually improved. The carbuncle gradually subsided, sloughs separated and the wound healed very slowly. The lung cleared up in a week's time. He was discharged cured on 16th June 1904 with a small ulcer.

Bacteriological examination—The sputum was examined. No plague bacillus was found. No pneumococcus could be detected. Examination of the bleb contents and the sloughs showed plague bacilli in the slides. Pure culture was obtained in agar tubes and the confirmatory staltactite growth was also obtained. The lung affection was therefore not specific but accidental.

Case VII—Yam Narayan Swamy, Hindu male, aged 60, butler by occupation, resident of 31, Free School Street. Admitted 10th April, 1904. Discharged 15th June, 1904.

On admission fever 103°F, speech and gait affected. Pulse soft and frequent. Tongue coated white, semi-conscious, slightly delirious.

Locally below the right ankle a big red area with some blebs at the centre, one of them was large and central. Plague bacilli only were found in the cultures from the bleb contents and the sloughs. Shdes prepared directly from the sloughs showed plague bacilli only. The femoral glands were enlarged and tender.

Previous History—Feverish for last four days, only the day before admission he had high fever. The carbuncle he had for four or five days.

11th April, 1904—The blebs all burst. Sloughs could be seen at their bases. Was delirious at night and had to be tied up, showed a peculiar shaking of the hands. Temperature remained between 102° and 101°.

12th April, 1904—Temperature, 103–102°.

The carbuncle was incised and some sloughs removed.

The discharge and the sloughs were examined bacteriologically and proved to be pure cultures of plague bacilli. Femoral glands less tender but swelling same as before. For the next two days, general condition improved, temperature came down to 100°F. Seemed to be always drowsy and the breathing was hurried though the lungs seemed to be quite normal on physical examination.

Drowsiness and some defect of speech continued till 17th April 1904. The sloughs separated from the carbuncles. Temperature became normal on 18th April, 1904. On 23rd April 1904, a fresh pustule appeared near the cavity of the carbuncle which was now quite red and healthy and $\frac{1}{2}$ inch deep. On 24th April 1904, the femoral glands were found fluctuating and were incised.

He remained in the plague ward 2 weeks more and was discharged on 15th June 1904. The carbuncle healed very slowly.

The following points present themselves for consideration:

- 1 (a) Whether the carbuncles described above are ordinary carbuncles caused by some septic micro-organisms—the carbuncles appearing independently of the onset of plague, or
- (b) They are caused solely by the plague bacilli themselves.
- 2 If the carbuncles are caused by the plague bacilli
 - (a) Whether they are secondary to general infection occurring through some other channel, or
 - (b) They merely represent the portals of infection, or
 - (c) They are the primary and principal lesions localising the infection.

The smear preparations from the *unbroken* vesicles failed to show the presence of any septic cocci in all the cases. The culture tubes inoculated from the intact vesicles showed pure culture of plague bacilli. It was only where the vesicles were broken and the smears taken from the open sloughs that the presence of staphylococci was evident (case No III) as well as some diplococci (case No V).

Tube cultures from sloughs showed the presence of staphylococci in case No III where the tube was inoculated from the open sloughs. The staphylococci after separation were found to be non-pathogenic to guinea-pig.

It is evident therefore that the presence of the septic cocci was due to secondary infection from outside, access being gained by the open sore.

Hence by exclusion and from the fact that pure uncontaminated cultures of plague bacilli were obtained from the intact vesicles in all the cases, it is evident that the carbuncles were caused by plague bacilli.

The carbuncles do not appear to be secondary to infection from other sources, for in all the cases the carbuncles appeared before any other trouble manifested itself, there was no evidence of the organs like the lungs, etc., being affected, nor was there any grave septicæmic symptom in any of the cases. On the other hand all the cases took a rather mild course, and most of them recovered.

Moreover, the tubes inoculated from the blood of the patients remained sterile, there was a distinct interval between the appearance of the carbuncles and the affection of the glands. The glands that showed any affection in these cases were only those which were in direct anatomical relation with the carbuncles.

So it follows that the carbuncles were not secondary manifestations to a general infection.

But it may be said that though no general infection occurred in these cases, the affection of the glands is the chief localising and reacting lesion, the carbuncles merely representing the points of entrance of the bacilli like the preliminary skin lesions, the pustules, phlycteneæ, etc., described by Lowson, Condon, Gaffkey, Wyssokowitz and Zabolotny, Schottelius, Muller, Ishigan, Simond and Calmette.

Lowson, for example, describes the seat of infection as a patch of red flake as occurs after insect bite without any skin lesion, and also carbuncle like pustules with tracks of lymphangitis passing from the carbuncles to the infected gland, as an illustration, he gives the case of Prof Ayoma, who punctured his hand in a post mortem examination, and had no reaction at the seat of puncture save a small vesicle, but had a track of lymphangitis up to the affected gland.

Schottelius also gives two cases of infection through wounds with a little inflammation of the edges, and lymphangitis starting therefrom.

Simond also describes the phlycteneæ in detail and distinguishes two varieties one he calls the "early phlycteneæ" coming on at the commencement of the illness which marks the point of penetration of the microbes, and the other "pemphigoid or late phlycteneæ" which are only accidents of convalescence. The former, he says, are shown by a person infected with plague, and their dimensions are from the size of a pinhead to that of a lentil—at the circumference there is just a faint reddish tinge, and generally there is no inflammatory reaction. In some of these, though very rarely, the phlycteneæ, after bursting, leads to gangrene which may extend in depth and breadth and produce the so called *pestilential carbuncles* which have occasionally brought to the disease the name of "Black Death," and recovery is exceptional when it goes up to gangrene.

Wyssokowitz and Zabolotny describe simple pustules with lymphangitis between them and the glands.

Gaffkey adds to the above certain carbuncular lesions as portals of general infection, but he specifies the occurrence of lymphangitis.

Felix Simon notes that in two only of the thirteen cases recorded, of accidental inoculation during the performance of *post mortem*, a small vesicle appeared, but without any inflammatory reaction in the skin.

Condon recorded only four cases in which the point of infection was represented by a papule with a tiny vesicle at its summit and without any vital reaction, although in every case the skin was examined very carefully.

Ishigan describes the case of a policeman who got infected through a sore between the toes, and there was inflammation of the lymphatic radicles.

Thus it appears that in the cases quoted above the skin always failed to react to the infection, while, on the other hand, the lymphatics invariably responded to the invasion, or general infection followed and glands enlarged in different sites, and not merely those that are in direct anatomical relation with the skin lesion [as described by Simond, and also by Calmette in the case of R. G. DeSilva at Opporto who had rapid necrosis of the skin in 24 hours in the hand from the bug bite, followed by the inflammation of the axillary, cervical and inguinal glands the same day and by death two days later].

In the cases we have recorded we find that —

(1) At the cutaneous lesion the plague bacilli were found to proliferate bringing about a definite reaction of the skin in the form of localised carbuncle, but there was no rapid necrosis of the skin.

(2) The affection of the glands when it took place was not simultaneous and was of those only that were anatomically related to the area of the skin affected, whereas in the cases mentioned by the authors quoted above there was hardly any interval between the skin lesions and the inflammation of the glands which were in all cases not only those in anatomical relation with the parts affected but also those in other parts of the body.

(3) There was no lymphangitis to show a primary reaction on the part of the lymphatics simultaneously with the cutaneous affection.

So that it may be taken as proved that in the cases recorded above the carbuncles were not merely the points of entrance of plague bacilli, and that the lymphatic system was not primarily affected as shown by absence of any reaction.

Next we have to consider the frequency of such cases. Carbuncles have been described as associated symptoms, sometimes diagnostic and sometimes of much prognostic value since the time of Thucydides. But these carbuncles were almost always secondary coming on in the course of the disease. We can safely set aside the description of the epidemics before the discovery of plague bacillus because many of the epidemics have been considered not to be plague at all. Yet a few cases have been recorded which had typical carbuncles and no other disturbance among which the case treated by Dr. Goville may be quoted. Dr. Goville examined a man with a carbuncle at Constantinople at the early part of the 19th century. This patient had no other

disturbance, and Dr. Goville developed the disease the next day and succumbed. Coming to more recent times since the discovery of plague bacillus, we find the mention of the cellulo-cutaneous manifestations, but their occurrence is not so frequent as in older times.

These cutaneous manifestations have been described either as preliminary skin lesions, merely indicating the point of infection or as secondary symptoms.

A small number of cases have been recorded, in which there was primary proliferation of plague bacilli in the skin with secondary infection of glands and of the system in some of the cases. Tucker describes such cases under the name of cellulo-cutaneous type of plague and says that they are characterised by the appearance of the so-called carbuncles, but he is of opinion that they have special features of their own, distinct from the true carbuncles, as they begin as blisters in the turbid serum of which plague bacilli abound, which give way and produce *extensive necrosis of the skin*.

Choksey describes such cases as acute necrosis of the skin starting from a blister which resembles exactly a small pox pock. This blister ruptures, leaving a raw angry looking base which soon becomes dark and cold to the touch and almost leathery, the tissues around it are livid and dark, the central necrosis spreads and large areas may become involved. In favourable cases a line of demarcation forms limiting the gangrene, and the skin around may show minute epidermal vesicles. He is of opinion that the appearance could not arouse the idea of carbuncles. Gordon Tucker also says that in a very small number of cases the infection might be localised in the skin, but he never noted carbuncles.

Strumpell also mentions the "so called carbuncles" which come on during the course of the disease, and he agrees with Choksey, they are dry or moist gangrene of the skin starting in the pustules and may extend in depth and superficially.

Zabolotny notes a case in Mongolia in which on the surface of the skin a small limpid vesicle appeared the surrounding skin became red and hard. In 24 hours the vesicle became opaque, and the contents under the microscope showed plague bacilli, the vesicle was replaced by black scab two days later. He does not give a detailed description of the local condition and of further progress of the case.

Schottelius noticed two cases which he describes as "large vaccine pock like pustule with a central scab, very tense and full of clear serum—epidermis not broken. Peripheral to these were similar blisters with opaque serum and all surrounded by intense red edge. The scab then fell off and the fluid was found a pure culture of plague bacilli." The local condition resembles the lesions of the cases described by me, but a detailed history of the cases is wanting.

Both Zabolotny and Schottelius noted that they never came across such a case in India. A greater local resemblance is shown by Dr. Childe's case which had a true carbuncle. But the case came very late when the whole swelling had no skin on it with a history that some indigenous ointment was applied after which it increased, glands in different parts were affected, the discharge from the carbuncle was not examined bacteriologically.

So we see that these cases are very rare—only three cases quoted above being all that I could find in recent literature.

Let us now explain the cause of rare occurrence of these cases

Plague is a septicæmic disease according to Dr. Bitter. He observes that in rats it always produces septicæmia without any local reaction even when the conjunctiva is smeared with a culture of plague bacilli. This is due to the animal's extreme susceptibility. In man who, according to Bitter, is less susceptible than rat, it is also septicæmic, with the peculiarity that a local reaction caused by the invasion of the plague bacillus is produced in the lymphatic glands corresponding to the site of inoculation, but none at the latter point.

Hankin experimented on animals and found horses, cattle, sheep and goats more refractory in the order in which they are mentioned here. In the cow, according to him and the German Commission, local abscess formed, but the pus was found sterile showing the destruction of the plague bacilli by the tissue cells. In sheep locally an abscess, with plague bacilli containing pus, formed—the animal recovering after slight fever. These facts show that local reaction depends much on the resistance of the skin of the animals inoculated.

Another fact, which is generally observed, is that during the middle and end of an epidemic the virulence of the bacilli is diminished as shown by the generally mild character of the cases. The cases noted above occurred during the month of March or later when plague in Calcutta is on the decline.

Conclusion

(1) Carbuncles can be caused by plague bacilli without the help or intervention of any other micro-organism.

(2) Such cases of carbuncle have been observed, though their number is small.

(3) They can be the primary and chief manifestation of the affection, and

(4) They may be classed separately.

In conclusion, I should express my heartfelt thanks to the authorities of the Medical College Hospital for having kindly allowed me to use the case-notes of the patients for the purpose of my paper.

THE SURGICAL TREATMENT OF CHRONIC DYSENTERY *

By E. F. GORDON TUCKER,

CAPTAIN, I. M. S.

CHRONIC Dysentery makes a considerable contribution to the mortality of Bombay, and forms a large proportion of the many hopeless cases which are admitted into the Jamsetji Jeejeebhoy Hospital—hopeless inasmuch as the disease has been allowed to progress up to a state when all healing within the ulcerated

bowel has become a practical impossibility. These cases are characterised by extreme debility and pallor, and by an emaciation which is more marked than even in the most advanced cases of phthisis. The pulse is thready and rapid, and the heart-sounds feeble. There is general tenderness in the abdomen, especially marked along the line of the great bowel. There is generally great desire for food, which, when taken, only provokes an action of the bowel and further abdominal distress.

The stools are somewhat large, almost or quite liquid, more or less feculent, containing a varying amount of mucus, occasional streaks of blood, and pieces of sloughed-off mucous membrane of varying size. The evacuations are extremely offensive.

When the case comes to the *post-mortem* examination, the condition of the large bowel is such as to produce wonder that the patient had lived as long as he did. In the worst type of case the peritoneal surface of the bowel is of a dark red colour, perhaps with traces of lymph here and there, and also occasionally with decided puckering in the length of the bowel due to the adhesion of the peritoneum in the course of the tube itself, as in the concavity formed by two adjoining sacculi. Now and then a fecal abscess is found, shut off from the general peritoneal cavity by dense but acutely congested adhesions, the most frequent site for these fecal abscesses being the neighbourhood of the splenic flexure.

On opening the bowel we see large ulcers, each perhaps two inches square, set deep in the thickened friable bowel wall, covered with purulent debris, or with long white tags of the partially sloughed-off mucous membrane. These ulcers are often found throughout the large bowel from the rectum to the cæcum, but are most intense about the latter.

Often, among the loculi formed by the adhesions of one part of the bowel to another, we find considerable collections of foul pus within the lumen of the bowel.

On consideration of such a bowel we note that the following conditions must have obtained during life. There must have been a vast amount of septic absorption continually going on from the whole length of this pus-containing decomposing tube, peristalsis must have been absent or irregular, glandular function must have disappeared, the ulcerative process has been so general and so advanced that recovery has been impossible in the absence of treatment of the diseased surface on the surgical principles of cleanliness, rest, and protection from further contamination.

In attempting to treat these chronic sloughing ulcers by antiseptic and astringent fluids, we find in practice that the use of enemata is disappointing if not dangerous. Considerable pressure has to be exerted on the friable bowel to push the fluid beyond the sigmoid flexure,

* A paper read at the September Meeting of the Bombay Medical and Physical Society.

and for the fluid to reach the caput cæci in any quantity, a state of considerable distension must exist throughout the tube. Even if this can be carried out without danger, we shall have only diluted the foul pus throughout the bowel, and the injection may or may not be the means of removing the greater portion of it, and thus allowing the ulcerated surface to be cleaned.

It is obvious that it would be a great advantage to be able to wash this ulcerated surface from above downwards, the natural course of the fluid contents of the bowel, and at the same time carry out uniform treatment of its whole length simultaneously, without in any dangerous degree raising the pressure of fluid within the colon.

CHRONIC SLOUGHING COLITIS APPENDICOSTOMY

Daviduth Bathuput, aged 30, came from Naini Tal twelve days before to be under treatment, having been ill four months with diarrhoea which was becoming worse. There had been some attacks of fever. He stated that he had had occasional attacks of fever for some time, for which he had taken a good deal of quinine. A year and a half ago he had had an attack of gonorrhoea.

The illness started four months before admission with an acute attack of fever, associated with the frequent passage of stools, which consisted mainly of mucus, and later they contained blood. At this time he was passing ten stools a day.

There was a history of a bad attack of dysentery two years before the present illness developed.

On admission there was profound anæmia and marked wasting. The spleen could be felt two fingers' breadth below the ribs, and was somewhat tender. The liver was not enlarged, and the lungs and heart were normal. The urine was normal.

The ova of the anchylostomum were stated to have been found on February 24th, two days after admission. For this he was treated with thymol, but without any result as to his general condition.

Astringents and opium had no effect in diminishing the number of the stools.

Appetite voracious, but he himself stated that he could not digest what he took. He was fed on peptonised fluid diet and given large doses of bismuth with salol, but without any good result. In spite of treatment he was getting steadily worse, passing from four to seven large motions a day. They were bile-stained, offensive, and contained large pieces of sloughed-off mucous membrane and free mucus. They were occasionally greenish.

On March 26th, enemata of 1 in 1,000 solution of iodo were tried, but without any result. By April 3rd, emaciation had become profound and the pulse very weak, with a temperature

always sub-normal. Each stool was passed with a good deal of griping. He was transferred to the surgical wards under Professor Quicke on February 4th, with a view to appendicostomy being done, and was cut off all medicines to enable us to see the natural condition of the stools.

On the 5th he passed a large semi-solid greenish motion, three during the night, and two in the afternoon of the following day. He continued in the same condition up to the 9th, passing about six motions during each twenty-four hours, of the same offensive character and with a considerable proportion of undigested food. All food given by the mouth was peptonised. He had evidently made no progress towards improvement under medical treatment.

The appendix was exposed on April 9th by the usual incision, and the base of the cæcum brought well up to the posterior aspect of the parietal peritoneum, the incision being closed by catgut sutures as regards the muscles and the peritoneum, and the skin sutured by silver wire. About three-quarters of an inch of the appendix was left remaining outside the wound on completion of the operation.

There were no symptoms of shock following the operation, but complaint made of abdominal pain on the following day, referable to the usual diarrhoea.

On the 13th, four days after the operation, injections of the large bowel *via* the appendix were commenced. The tip of the exposed appendix having been snipped off, and the hæmorrhage from the terminal artery stopped, the point of a No. 4 rubber catheter was introduced into the small fleshy spout formed by the stump of the appendix, and attached to a glass irrigator after all air had been expelled from the attaching tube. Seventy-three ounces of a solution of 1 in 400 of protargol were introduced.

On the following day he declared that he was feeling much better. After the injection of the preceding day he passed a considerable fluid motion consisting of large sloughed-off pieces of the mucous membrane and portions of undigested food. He had four motions on this day (the 14th) which also contained large sloughs. Sixty-three ounces of solution of protargol were passed into the bowel.

On the 15th, 63 ounces of the solution were again given and only two motions were passed, there being a tendency for the usual large sloughs to disappear.

The injections were continued daily, on the 16th there was only one motion, which in places showed signs of commencing to take the form of the bowel. It contained a considerable amount of undigested milk. On the 17th the only evacuation was that caused by the injection, which passed through the bowel without change and without bringing away any more sloughs.

On the 18th three motions were passed during the day—one at the time of injection (of which 70 ounces was given), one during the previous night, and one in the afternoon. No sloughs or mucus passed.

On the following day there were two motions with similar characters, and on the 20th two also.

On the morning of the 21st the stool was simply the irrigating fluid containing a large number of undigested curds.

His condition was greatly improved, there was no abdominal pain, he felt stronger, and his facial expression was different. His appetite was voracious. He was taking peptonised milk and toast, but refused albumen water. He was also given plasmon in milk. The powers of digestion in the stomach and bowel appeared very deficient.

Shortly after this the patient was returned to the medical wards, where occasional irrigation of the large bowel was practised. During this process it was noticed that there was œdema about the ankles, and the amount of fluid injected was gradually reduced.

The condition of the bowel was now so far improved that the sloughs had completely disappeared from the evacuations, which were, however, more frequent than normal and which were often semi-solid and contained mucus.

The narrowing of the lumen of the appendix soon became marked and irrigation was difficult. During a slight attack of bowel irritability an astringent injection was used, and after some further stage of delay in the convalescence, the stools became formed, of normal numbers, and gradually regained the pigmented condition which is characteristic of the normally functioning liver. In fact, the patient after the sloughing condition of the mucous membrane of the large intestine had disappeared, presented many of the features of spire, and was treated as a case of that disease. There were some suspicious crepitations in the left axilla a couple of months ago, but these have now disappeared, and he is steadily putting on weight. As an index of his general condition of extreme malnutrition some six weeks ago, he developed a corneal ulcer followed by a hypopyon which has resulted in the loss of vision in the right eye.

For a reference to the possible uses to which appendicostomy may be put, see a paper by Keetley in the *British Medical Journal* for October 7th, 1905.

In the discussion which followed Dr Powell said that he could not see the use of the above operation and considered colotomy preferable. This puts the sigmoid flexure, which in his experience is the chief seat of the ulcers, at rest, and irrigation can be readily performed through the colotomy wound.

Captain Tucker in reply entirely disagreed with this view. He referred to the immense disadvantage of establishing an artificial anus

and the lasting discomfort which it brings to the patient. Irrigation through a colotomy wound would not be equally efficient, and in his opinion thorough irrigation could only be carried out by the method he had described, while rest of all ulcerated parts would be best secured by thoroughly removing all possible sources of irritation.

FURTHER OBSERVATIONS ON THE USE OF ADRENALIN IN PLAGUE

By KHAN BAHADUR N H CHOKSY, M.D.,

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In a previous communication to this journal* the preliminary observations with adrenalin were related. They indicated that adrenalin exerted a distinctly beneficial effect upon the circulation by increasing the pulse tension, remedying its irregularities and steadying and sustaining the action of the heart, until such time as the system was able to eliminate the toxins, and bring about recovery. The full measure of the effects of the drug could not, however, be demonstrated, inasmuch as it was tentatively employed and other drugs were simultaneously used. Nor was it then possible to determine in what doses and with what frequency it could be exhibited, the limit of its usefulness as also of its tolerance and finally its ill effects, if any, had to be established. Further observations were therefore undertaken at the Maratha Plague Hospital during 1905 when adrenalin was used throughout the whole period of the epidemic and certain data having been obtained, its use was still further extended during the epidemic of 1906. It is the purpose of this article to summarise the results of the above observations.

The main object of the observations, 1905, was to compare the effects of small, medium and large doses of adrenalin, to fix the limit of the safest single maximum dose, to determine the frequency of its administration, and to record its after or ill effects. Correct records of the amount administered and its frequency were kept and the effect upon the circulation carefully noted. As during the height of the epidemic, Yersin Roux antiplague serum was also employed, it was possible to institute comparison between those cases treated with the serum and adrenalin and those without. And full confidence having yet to be established in its utility, it was determined to use it simultaneously, but in alternate doses with the stimulant injection previously described (strychnine, sparteine and atropine). In order to allow of facility in administration and exact dosage, it was prescribed in the following formula—

R	Adrenalin solution	m 5
	Normal salt solution ad	5i

The initial dose of the above varied from one to three drachms every three or four hours according to the condition of the pulse. If there was no improvement, or if the pulse became steadily worse, the dose was increased from four to six drachms and the frequency to two hours. When so prescribed, it was not found practicable for various reasons to administer twelve doses in the 24 hours, and the daily average in grave cases therefore came to about ten doses, equivalent to about 300 minims of adrenalin solution. This maximum dose was kept up for three or four days, sometimes longer, and after the pulse exhibited sustained improvement, it was gradually reduced by one drachm at a time, and subsequently at longer intervals. The doses were

* Cardiac Failure in Plague and its Treatment, April, 1905

gradually decreased as the patients' condition improved, and in by far the largest number of cases it was entirely stopped by the end of the second week. Even after sustained improvement in the condition or the circulation, it was found that abrupt stopping or too great a reduction in the dose was not safe. It soon reached unfavourably upon the pulse, necessitating increased dosage. The decrease should therefore be always gradual and its effects require careful watching. If the maximum dose failed to have any effect, the condition of the patient was practically hopeless. In those cases where the circulation did not improve, notwithstanding the disappearance of all acute symptoms and general amelioration, it had to be kept up, and some patients received adrenalin in small doses for periods extending from six to eight weeks without any apparent harm.

In order to grasp fully the results obtained under the above method, it would be necessary to revert for a time to the results of the previous observations of 1904 which were as under —

Line of treatment	Number	Died	Recovered	Case mortality per cent
Stimulant and camphor injections	324	268	56	82.7
Stimulant injections * adrenalin (by mouth)	598	416	182	69.5
Adrenalin only (mostly subcutaneously)	70	47	23	67.7

The above statement indicates that adrenalin used by itself had greater influence in lowering the mortality than when employed simultaneously with the stimulant injection, and further that the combination of stimulant injection and adrenalin showed better results than the older method of treatment by stimulant and camphor injections only. The results of the observations of 1906, may now be stated as follows —

Line of treatment	Number	Died	Recovered	Case mortality per cent
Stimulant injection + Adrenalin	1,038	810	228	78.0
Do do + Yersin Roux serum	222	138	84	62.1

The foregoing table demonstrates that the combination of adrenalin and serum exhibited the best results as also the fact that among the cases treated without the serum, the result, although less favourable than those of 1904, were still better than under the older plan of treatment. Included in the above series are 241 cases to whom adrenalin was administered subcutaneously in doses of 10 minims mixed with an equal quantity of normal salt solution, eight to ten times during the day, the stimulant injection having been administered by mouth with water. The effects of this method of exhibition were not so marked, and the mortality was higher by nearly 7 per cent.

The above results, if analysed according to the doses administered and their frequency, furnish some instructive data. As the ultimate fate of every plague patient depends upon the extent of the cardio-vascular paresis and of the degenerative changes in the myocardium as well, the action of any drug, however potent, is subject to considerable limitations. Given a moderate degree of

toxæmia and early treatment, a drug would exert far better effect and in much smaller doses, than under other circumstances where these conditions do not prevail. And it has also to be recognised that the response from powerful stimuli would not be so rapid, nor so durable where degenerative and paralytic changes have advanced far. Nor can any drug counteract such tissue changes as have been already brought about by the toxæmia. Thus out of 1,019 patients who received adrenalin by mouth, it was only in 144 that the conditions could be said to have been at all favourable, and where moderate doses of adrenalin varying from five to fifteen minims had the desired effect. The rate of mortality among them was 37.5 per cent only. On the other hand, 875 patients received large doses varying from twenty to thirty minims every two hours, 451 patients could be kept alive under them for two days, 297 for five days, and 127 patients for six days and over. The rate of mortality among them was 88.3, 71.1 and 65.5 per cent respectively. That is to say, that in more than half the number of cases the circulatory system was so gravely affected that adrenalin could sustain the heart's action for about two days only, on the other hand, where the conditions, though grave, but were comparatively more favourable, life could be prolonged for five or six days or even longer and a few more lives eventually saved. The sustaining action of adrenalin is thus well demonstrated —

Dose of adrenalin in minims	Number	Case mortality per cent
5—15	144	37.5
20—30 administered for 2 days	451	88.3
5 „	297	71.1
6 „ and over	127	65.5

The above figures indicate the gravity of the cases dealt with and the narrow border line that always exists between life and death in plague. The main purpose of the above observations having been thus served, greater confidence was established in the usefulness of the drug, and it was resolved to employ it solely during the epidemic of 1906. The stimulant injection was therefore discarded, in those cases where nervous prostration or coldness of the extremities required temporary stimulation, camphor injection* was used. The only deviation in the method of administration was that instead of gradually increasing the dose of adrenalin from 15 minims upwards, as the condition of the circulation grew worse, rather full doses were given initially, but in no case exceeding 30 minims every 2 hours. The effect of this was soon apparent upon the pulse, which became almost at once steady, and was maintained at a more or less uniform level throughout the acute period of the illness. If the pulse maintained this improvement for four or five days, the dose of adrenalin and its frequency were gradually reduced. The advantage of this method lay in the fact that the initial full dose steadied the circulation and prevented its getting worse, and thereby saved the heart and finally it contributed to a greater saving of life. The above method was carried out from January to June of the current year, and comprised 802 cases, of whom 575 died and 227 recovered, equivalent to a case mortality rate of 71.6 per cent. From June to October 102 patients were treated with adrenalin administered subcutaneously in doses of minims 20 every two hours, the patients however receiving 10 doses only in the day, equivalent to 200 minims of the drug. There were 65 deaths and 37 recoveries, that is, a case mortality of 63.7 per cent. If we now tabulate the above observations extending over three epidemics as under, we see

* Camphor 2, Ether Sulphuric 3, and Oil Olive, 7 parts

how the results have worked out under the varying methods of treatment —

Line of Treatment	Number	Died	Recovered	Case mortality per cent
Adrenalin (by mouth) + Stimulant Injection	1636	1,226	410	74.3
Adrenalin (by mouth)	787	571	216	72.5
Adrenalin (subcutaneous ly)	157	105	52	66.8
Adrenalin + Yersin Roux Serum	252	152	100	60.3

The adrenalin when used by itself has given better results than when employed alternately with the stimulant injection. The hypodermic method has much in its favour in view of the still better results, and finally the best results are seen under the combination of adrenalin with the Yersin Roux serum. These observations having extended over three epidemics, it may be argued that the later and better results may have been due to lesser virulence of plague, that such was not the case is indicated by the following statement showing the number of attacks and deaths reported in Bombay —

Year	Attacks	Deaths	Case mortality per cent	Case mortality including ingpatients treated in the plague Hospitals
1904	15,488	13,538	87.40	89.20
1905	16,308	14,193	87.06	88.13
1906 (8 months)	11,864	10,456	88.13	90.34

The general mortality rate has been about the same, if at all, a trifle higher during 1906 if hospital cases were to be excluded, the normal plague mortality would be between 89 to 90 per cent, a truly appalling rate, indicating the extreme virulence of the affection in Bombay.

SOME NOTES ON THE CONSERVANCY OF THE SMALLER TOWNS IN BURMA

By J. ENTRICAN,
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THE effective conservancy of the smaller towns in Burma is a problem of considerable interest, but by no means easy of solution. The chief difficulty is, as usual, financial. No expensive or elaborate system is possible, and our object being to obtain the best results with the limited means at our disposal, much that is desirable must be sacrificed to considerations of economy.

The almost universal absence of a pipe water supply, makes any adaptation of the septic tank system out of the question.

I believe most of those who have made any study of the question are agreed that some modification of the "pail" or "bucket" system is the best solution of the problem. This is generally

spoken of in Burma as the "Bassein system" for it was first introduced there by Lieut-Colonel G. P. Frenchman, I.M.S., some years ago. Since then, many towns have adopted the system and I propose to say something about its practical working and cost, founded on the experience of the last two years.

The inhabitants of a town may be divided into two classes, those who wish for a private latrine in their own houses or compounds and who are willing to pay for this luxury, and those who are either unable or unwilling to pay. For these latter some form of public latrine must be provided. It is essential that both the public and private latrines should be worked on one uniform system, and that no latrines of any kind be permitted except those scavenged by the regular conservancy establishment.

Having determined the number of public and private latrines required, the next step is to obtain a suitable trenching ground. This should be situated as near the town as practical, in the direction in which extension is least liable to occur, and if possible on its lee side with reference to the prevailing wind. This ground should have a good slope, never become water-logged and drain away from the town water-supply. A sandy loam appears to be the best variety of soil. As regards size I believe it should be large enough for two years' trenching, though this may not always be possible. One acre to every 800 inhabitants will give roughly the required dimensions. No ground should ever be trenched a second time without in the interval having borne one crop at least. In some towns it may be an advantage to have two trenching grounds, serving different parts of the town. On the trenching ground, a house, best built of corrugated iron, is required, in which spare buckets, lids, tools, dry earth, etc., can be stored. Some water tubs are also required as all cleansing of the buckets is done here.

Next, as regards public latrines, there are many patterns, some very excellent in their way and very expensive also. Most of these have cement floors and cess pits. Theoretically this is excellent, practically the very reverse, for the cement sinks here, cracks there and in a short time the latrine becomes foul with a foulness impossible to eradicate, short of complete renewal. It may be argued that this state of affairs should not exist if the work was properly done originally. This is undoubtedly true, but it is very difficult to get good cement work done in this country, and what I have described does exist in the majority of cases while its remedy is often tedious and always expensive. Moreover the surrounding ground usually receives a large share of the water which the sweepers use to clean these latrines, and rapidly becomes foul.

A moveable floor which can be picked up and renewed, with a minimum of trouble and

expense, appears much more satisfactory. Railway cinders have proved excellent for this purpose. They can be obtained at a nominal cost by any town situated on the railway, and spread in a layer 3 or 4 inches thick, form a floor which absorbs and deodorizes urine, etc. This floor can be renewed, as often as is found desirable, by the sweepers without resort to any outside labour.

If cinders cannot be obtained, a thick layer of clean sand, frequently renewed, answers the same purpose, though less effectively.

The latrine itself can be cheaply made of corrugated iron on a framework of tinned wood. An iron framework would of course be better but is more expensive. The seats can be economically made of non-corrugated galvanized iron sheets, with holes cut at the necessary intervals. The whole latrine can be run up quickly by any local carpenter.


The seats are screened off from each other, and a complete partition exists, dividing the latrine into two halves, one for males, the other for females.

A lamp in the centre lights the whole latrine and is greatly appreciated by the people. It does more than anything else to put a stop to the use of the roadsides, etc., for defæcation, after sunset.

No water is used in these latrines, the seats are cleaned with dry sand, which is afterwards swept into the buckets, and it is found that such latrines are much easier to keep free from smell than those with cement floors, cesspools, etc.


As regards private latrines, while it is desirable to have them embody as many good points as possible, on the other hand elaborate rules for their construction only tend to make people shy of having them, a very undesirable result, for I think they ought to be encouraged as far as possible. The only points to be insisted on, are that the latrine should be built against the compound fence, away from the house, with an opening into the conservancy lane (which should run behind every house), through which the bucket can be withdrawn and replaced. Also the floor on which the bucket rests should be of brick or stone.

The bucket in use is the ordinary stable pattern, but the lid in general use elsewhere has been found unsuitable. It is shaped somewhat

thus  and slides over the top of the

bucket until the two slots catch in the handle attachments. If this lid slides on and off without difficulty, it is very defective as a means of closing the bucket, while if it fits tightly and performs its function properly, there is often great difficulty in getting it on or taking it off. I have frequently seen a sweeper struggle for five minutes with one of these lids in his

endeavour to put it on, but it is certainly not in human nature as embodied in the average sweeper to do this unless under the eye of a superior, so that lids presenting a difficulty, and these form a large percentage of the whole, are never put on properly at all, but sit loosely on the top of the bucket and are useless in restraining the exit of its contents during transit.

A modified lid shaped on section thus  has been found very successful. It only requires to be pushed well down into the bucket, to effectively close in the contents, and its removal is equally simple.

A very excellent form of bucket has been devised by Count Calderan, late Municipal Engineer, Mandalay. This has a moveable perforated partition dividing its interior into an upper and lower portion, thus separating solids and liquids. Its advantages are not, however, in my opinion, commensurate with the increased cost, which is four or five times that of the stable bucket and lid, while at least double the amount of transport is required for its conveyance.

The carts for conveying the buckets to and from the trenching ground may be drawn by a single bullock or by a pair. A judicious combination of both varieties is most satisfactory. For the public latrines a large cart, taking 36 buckets and drawn by a pair of bullocks answers best. Instead of being made in the ordinary way, with the two poles to which the yoke is attached, running diagonally under the cart and meeting in a point in front, it is better to have the two poles parallel throughout their length. This enables the cart to be made lighter and lower, for it is no longer necessary to raise the body of the cart, high above these poles, in order that the lower rows of buckets may clear them. The two parallel poles are in fact utilized to form part of the framework which supports the lower rows of buckets.

The small carts carry 20 buckets arranged in pairs, so that the cart can be built narrow and can go down the conservancy lanes behind the houses, work which is quite impossible for a large cart and pair of bullocks.

The public latrines require to be cleared twice daily, morning and evening, the private latrines once only. Every clean bucket is half filled with sawdust (or some such substance) before the carts start on their rounds. On arrival at a latrine the dirty bucket is withdrawn and its contents covered up with more than half of the sawdust contained in the clean bucket. The clean bucket with the remaining sawdust in its bottom is placed in the latrine, the dirty bucket after its lid has been adjusted, on the cart. By this means smell, during transport through the town, is avoided, and the sawdust in the bottom of the bucket in use, absorbs the urine and prevents splashing.

Many other things besides sawdust can be used. The best of all is wood ashes, but the

supply is irregular, depending on the frequency of fires in the town

Dry earth is good, but adds enormously to the weight of the buckets. Paddy husk is light but inferior to sawdust in deodorizing power, it also cannot always be obtained. Mixtures of sawdust and ashes or paddy husk and ashes are both good

All work should be done by daylight, night work means defective supervision and consequently bad work, while if the above precautions are carried out, the carts can travel through the town at all hours, without anyone recognizing their nature through the olfactory sense

Having given some idea of what has been found to answer best, I will now give an estimate of the cost of such a system. To take a concrete example, suppose we have a town of 9,000 inhabitants in which it is required to start a conservancy system *de novo*

I would allow one public latrine seat for every 60 inhabitants, or a total of 144 seats and divide these up amongst 16 latrines, 8 with 10 seats in each and 8 with 8 seats. There is no use in having a small number of large latrines, people will not go a long distance for the purposes of nature, if they can find convenient cover close at hand, and this they can usually do. These 144 seats would require 288 buckets daily. Let us also suppose that an equal number of buckets are required for private houses, offices, etc., making a total of 576 buckets to be dealt with daily

The distance to the trenching ground must next be considered. It may only be possible for a cart to make one journey in the morning and one in the evening, or, on the other hand, two journeys both morning and evening, or again two journeys in the morning and one in the evening. Taking the last supposition as a basis of calculation, we should require two large and six small carts to carry the 576 buckets in daily use, as this, however, would not leave a single spare bucket for any emergency, it would be better to have 7 small carts

On bazaar days, for instance, the latrines close to the bazaar require the buckets changed, not twice, but 3 or 4 times

Other solutions are, of course, possible, and there is scope for much ingenuity in arranging the best combination of large and small carts

We would also require—

Twenty sweepers—9 working as cart-drivers, 5 at the trenching ground, digging trenches and cleaning buckets, and 6 in charge of public latrines

Eleven bullocks which can be hired

One cart and driver for bringing water to the trenching ground

One cart and driver for carrying saw-dust, sand, etc

One conservancy *goung* to oversee the work

The monthly cost of this establishment will be as follows—

20 sweepers at Rs 12 rising to Rs 15	Rs	A
Sweepers are a migratory class and the average of their pay will rarely exceed Rs 13		
1 conservancy <i>goung</i>		260 0
11 bullocks (hired) at Rs 10		30 0
1 water cart and driver		110 0
1 saw dust cart and driver		20 0
		20 0
Total Rs	440	0
Add—lighting of 16 latrines at Rs 3 each per month		48 0
Add—for contingencies, renewal of buckets, tools, repairs to carts, etc		88 0
Total Rs	576	0

or, in other words, Re 1 per bucket per month. If private latrines are charged for at this rate, the actual monthly cost to the town fund will be only Rs 288

Some saving may be affected by purchasing bullocks outright. This, however, adds to the initial expenditure, and it is doubtful if there is much saving in the end

As regards initial cost, the following will be the probable expenditure—

	Rs	A
144 public latrine seats at Rs 35 per seat	5,040	0
2 large carts at Rs 90	180	0
7 small carts at Rs 60	420	0
Trenching ground shed	300	0
1,000 buckets at Re 1-4	1,250	0
500 lds at Re 1-4	500	0
Cart shed	500	0
Trenching tools, etc	100	0
16 lamps for latrines at Rs 15	240	0
Total Rs	8,530	0

or, in round figures the scheme above outlined can be installed at an initial cost of Rs 9,000, and a monthly recurring cost of Rs 300

It is a decided advantage, though not a necessity, to build sweepers' quarters. The men can thus be better supervised than if they live scattered throughout the town. The additional cost will be Rs 2,000—Rs 3,000, depending on the class of accommodation provided. It is not suggested that the above is an ideal system, but it is a practical one for poor towns unable to meet any large expenditure, and if carefully supervised, its faults are more theoretical than real. Continual and intelligent supervision is after all the most important factor of success. Without it, no system that money can procure, or the wit of man devise, will be even a modified success, while with it, good results can be obtained even from poor resources and faulty methods

EXTRACTION OF CATARACT IN THE CAPSULE

By HENRY SMITH,

MAJOR, I.M.S.,

Civil Surgeon, Jullundur

"THOUGH science, like nature, may be driven out with a fork, ecclesiastical or other, yet she surely comes back again" (Huxley)

Major Maynard's paper in the *Indian Medical Gazette* of August 1906 would not require any notice from me were it not that in his last paragraphs he substantially issues me a challenge, which is as follows —

"It is futile as well as arrogant to compare his operation to litholapaxy as Major Smith has done. This comparison suggests that those who do not practice it are neglecting their duty to their patients, in fact are willfully performing an inferior operation on them. The deliberate and I believe, unprejudiced pronouncement of the three Presidency Ophthalmic Surgeons of India one after another against the operation together with the results published by its advocates should go far to make men pause before adopting an operation for which such extravagant claims have been made and in which such manifest dangers are incurred."

Let us examine Major Maynard's case. In the first place let us refer to his paper in the *Indian Medical Gazette*, of June 1901, which, as far as I know, is his first experience of the old operation, and compare his position there with that in his paper in the *Indian Medical Gazette*, August 1906, in which he gives his first experience of extraction in the capsule. In the former paper he deals with 300 cases, in the latter he deals with 175 cases. His results are most concisely shown on the following tabular form —

I M G, June, '01		I M G, Aug, '06	
Old operation Results		New operation Results	
Good	83 20 p c		92 6 p c
Indifferent	9 9 "		5 1 "
Bad	6 8 "		2 8 "
Unknown	7 cases		Nil
Escape of vitreous	14 3 p c		38 28 p c
Hæmorrhage from the fundus—equivalent to detachment of the retina so called—properly speaking detachment of the choroid	1 3 "		Nil
Iritis	22 3 "		1 7 p c
Keratitis	11 "		10 8 "
Rupture of capsule	Nil		17 1 "
After cataract not mentioned but necessarily	100 p c		Nil

Let any one compare Major Maynard's sweeping condemnation of the new operation in favour of the old by the above tabulated statement of his own facts and see for himself how his condemnation might justly be reversed. The most objectionable feature in his facts is his enormous percentage of escape of vitreous, from which I can only infer that he does not know how to do the operation. But even objectionable as it is, his 38 28 p c of vitreous escape does not seem to have much vitiated his results, especially when we compare them with his results of the old operation published in the *Indian Medical Gazette* of June 1901. Given a competent "pair of hands"—a requisite for this operation—and knowledge of how to perform it, if the possessor excludes about 5 p c of the juvenile cases (juvenile cases are not suitable for extraction in the capsule), I see no reason why the operator should have more than 2 p c of vitreous escape. The operator requires to be able to diagnose this 5 per cent which I refer to, before he makes his incision, and this he can only do by experience, or, if a novice, by being shown by a man of experience. Personally I do not exclude this 5 p c, as I fear iritis and after cataract more than the escape of a bead of vitreous. A short time ago in the presence of a visitor (a well-known member of the Profession in India) I did 71 in two successive days, and on the following day had reached the 97th case before I had even a drop of escape of vitreous, and that without rejecting a single case. Surely, what I can do any one of experience can do if he knows how.

Major Maynard evidently went at this very highly technical operation as a man would go at shoeing horses from a mere description in a veterinary book. No one will doubt but that the latter would lame many horses before he would succeed in shoeing them properly, and that he would be at a certain period in his experience inclined to come to the conclusion that horses were better without shoes.

Major Maynard, Major Herbert and Major Elliot had no detachment of the retina in extraction in the capsule, though they lay great stress on the liability to detachment in this operation. Why?

Examine Major Maynard's facts in the above tabular statement, and it will be seen that they are against him as regards retinal detachment.

He lays stress on keratitis in this operation. Examine his own facts, and it will be found that they are against him. His frequency of rupture of the capsule in this operation is an indication to me that he does not know how to do it.

Concerning the ultimate result of prolapse of vitreous he says "Such proof we have not yet beyond the fact that Major Smith still does the operation and the Punjabi still comes to have it

done Were the Punjabi patients mathematicians and scholars, the proof might be considered enough" The Punjabi patients are often skilled artisans, goldsmiths, engravers, tailors, barbers, and merchants These men have to live by their trade and certainly require as acute vision as Major Maynard's mathematicians and scholars The people of the Punjab are not as "jungli" as Major Maynard thinks Major Maynard's position from the passage quoted is that the old operation gives better vision than extraction in the capsule I have personal experience enough to know that this is not the case, and my experience extends to men whom Major Maynard would call scholars from both Calcutta and Madras who have experience of the old operation in their own eye and do not desire it in the other

Major Maynard says my claims are "extravagant" I have only to say that as my experience grows my claims are steadily growing in "extravagance" He says I am "arrogant," I suppose for having given the profession my opinions based on an experience of at the present time about 16,000 cataract extraction about, 14,000 of which have been in the capsule He, Major Herbert and Major Elliot combined are surely supremely modest when they arrive at sweeping and dogmatic conclusions on their united experience of 225 cases of an operation which they evidently do not know how to perform! It is not surprising under these circumstances that they press into their service the prestige of their position against the arguments of facts and experience, the only arguments which science recognizes Prestige and personalities are surely outside the bounds of this controversy

He says "The deliberate and, I believe, unprejudiced pronouncement of the three Presidency Ophthalmic Surgeons of India one after another against the operation together with the results published by its advocates, etc" As regards the advocates who have published results of extraction in the capsule mentioned by Major Maynard, they are Captain Oxley, Major Budwood, and myself The two former published a few novitiate cases, and certainly their results compare very favourably with novitiate cases of the old operation, and I see no reason to regard them as less competent to compute results than the "Presidency Ophthalmic Surgeons"

Major Maynard is not correct in representing me as accusing other men of "wilfully performing an inferior operation on their patients" I have given my facts, my experience and my opinions based thereon to the profession It matters nothing to me what other Surgeons do

Major Maynard says I am "arrogant" It is not I who am arrogant. It is my facts that are arrogant—facts which, though driven out with a fork Presidential or other, will surely come back again.

A Mirror of Hospital Practice.

SURGICAL CURIOSITIES *

By W J NIBLOCK

CAPTAIN, I.M.S.

IN a large hospital such as the Madras General Hospital, one necessarily meets with many cases both curious and rare

The cases which follow are, I think, worthy of being catalogued as curious, and have all (with one exception) been under my care in the Surgical Wards of the Hospital Many of them aptly illustrate the adage that "truth is stranger than fiction."

It is a matter of regret to me that the cases are arranged in rather a haphazard manner, but this could not easily be avoided under the circumstances

Congenital Malformations and Deformities are, at least so far as my experience goes, comparatively rare in this country Two cases which I have seen are, however, worthy of more than passing notice

The first is that of a Mahomedan, aged about 50, who came to the hospital during the past year to be treated for abscess of the leg Examination revealed the fact that one of his arms (the right, I think) was malformed It was very much smaller and shorter than its fellow, the shortening being particularly noticeable in the forearm, which was about one third the normal length The arm stopped short at the wrist, and looked exactly as if it had been amputated except for the presence of five tiny soft masses each about the size of the terminal phalanx of an infant's finger, and each bearing a tiny nail

These were situated rather towards the anterior aspect of the end of the stump, the thumb rudiment being slightly separated from the other four The skiagram which I show you demonstrates the fact that no bone was present below the radius and ulna, which were fused together and greatly shortened The patient refused to remain in hospital or to allow a photograph to be taken, and it was with the utmost difficulty that a skiagram was obtained

The second case was seen by me whilst residing in the Resident Medical Officer's quarters at the hospital One afternoon, just as the Resident Medical Officer and I were going out for a drive, a Hindu came up with the dead body of a fœtus which he wished to sell, and of which he was the father

The body of the fœtus was of normal size, the lower limbs were fused together for their whole length, the toes with the anterior part of the feet being turned out so as to resemble the tail fin of a fish On examination of the face it was seen that only one eye was present which was situated in the centre of the forehead In other words, there was a combination of two extremely rare monstrosities, viz, 'siren' and 'cyclops' The infant was a female, and according to the father's account had lived for several hours after birth He stated that he had several other children all normal, as were he and his wife The specimen was unfortunately lost

Strangulated hernia offer endless variety, but the following present some distinctly unusual features and complications

(a) One morning, a few weeks ago, a syca was admitted with the history of having been kicked by a horse a few hours previously, on the left hypochondriac region of the abdomen, where a confusion could be seen He was put to bed and ice applied Next morning I saw him for the first time He was then suffering from what appeared to be acute general peritonitis with

* Paper read at Madras Branch of Brit Medl Assoc

slight distension of the abdomen. There was no loss of liver dullness.

Examination of the right inguinal canal revealed the presence of a strangulated inguinal hernia. He was at once prepared for operation, herniotomy performed, and about 8 inches of strangulated small intestine reduced.

A finger passed up through the internal ring was withdrawn covered with a yellowish material of the consistence of pea soup. Rupture of small intestine was diagnosed, the abdomen opened in the middle line above the umbilicus, and a rupture, the size of the thumb nail, discovered in the small intestine below and to the left of the stomach, at a place corresponding with the site of the kick. This was partly shut off by omental adhesions, but not sufficiently so to prevent general infection of the peritoneal cavity, more than ten ounces of the sore purulent fluid being present in Douglas's pouch alone. The rupture was closed by sutures, the abdominal cavity flushed out and a tube placed in Douglas's pouch and brought out through a whole above the pubes. Major Giffard, F.R.S., assisted at the operation, which the patient stood very well. About 36 hours afterwards severe stercoraceous vomiting set in, and ended in death.

(b) A patient was admitted a few months ago for left strangulated inguinal hernia. During the preparation for operation the tumor and all the symptoms of strangulation disappeared without any local manipulation, and the patient recovered. Five days later I operated on him for radical cure of the hernia and discovered that, in addition to small intestine, a part of the urinary bladder was present in the sac. On questioning the ward boy, who had prepared him for operation on his admission, he said that whilst being then prepared he passed a large quantity of urine and expressed himself as feeling much relieved. In this case it would appear that the trouble was due to the herniated portion of the bladder being over full and causing pressure on the intestinal loop, sufficient to give rise to symptoms of strangulation, and that, as soon as the pressure was relieved, the symptoms disappeared. The patient was an ignorant cooly, and could give no definite history as to the duration of the strangulation.

(c) One night a patient was admitted with a history of strangulation of a right inguinal hernia. I saw him about two hours later when he was in a state of severe shock, with a cold sweat all over his body, stercoraceous vomiting, rigidity and retraction of the abdominal muscles. A soft flaccid tumor was present in the right inguinal region, dull on percussion, and irreducible. Rupture of intestine, the result of taxis outside hospital, was diagnosed. An incision was made over the tumor, which, on exposure, looked like bladder. No gut or omentum was present in the inguinal canal but when a finger was passed into the abdominal cavity through the internal ring, it, on withdrawal, was found to be covered with foul smelling faecal matter. Median laparotomy was at once performed, and the peritoneal cavity seen to be filled with fluid faeces. No rupture of intestine could be discovered, but evidences of strangulation of omentum were easily made out. As the patient was now almost moribund no prolonged search was made and he was sent back to bed, where he died shortly afterwards.

Post mortem examination revealed that the inguinal tumor was a greatly hypertrophied diverticulum of the bladder which was congested and constricted towards its proximal end. The great omentum was dragged out, lengthened, and thickened along its right border, its lower parts being congested, swollen and separated from the healthy upper part by a distinct constriction. The hepatic flexure of the colon was congested and ruptured at the site of attachment of the great omentum which was torn away from the ruptured portion of the colon. The tear was evidently due to the dragging of the omentum on the colon at that spot.

The next case is that of a Mohammedan Fakcer who stated that his age was 105, and he looked it. He came in with a right strangulated inguinal hernia, which I operated upon. A fortnight later, whilst being carried downstairs on a stretcher, feet foremost, a reducible inguinal hernia on the left side became strangulated. He was operated on by me a few hours afterwards, and a very tightly gripped knuckle of intestine reduced.

In spite of his age, of the fact that he was a confirmed opium eater, that he tore off his dressings several times and insisted on moving about the wards and verandahs, both wounds healed by first intention.

(e) A Hindu, 45 years, admitted 13th September 1901, was seen by me shortly after admission. He had a swelling in the right half of scrotum, the size of a small orange, which I took to be a suppurating hydrocele or haematocele. There was also slight fullness in the right inguinal canal, which I believed was due to incomplete omental hernia. It was irreducible. Both swellings were dull on percussion, and a faint impulse could be obtained in the scrotal swelling when the patient coughed. The patient stated that he had not at any time suffered from constipation or obstruction of the bowels. On the contrary, he gave a history of diarrhoea, but could not give its duration. He had never suffered from vomiting. Between the time of admission and operation—about 40 hours—his temperature and pulse were normal, there was no peritonitis or shock and no vomiting. He passed several motions about which nothing abnormal was noticed. His general condition was, however, distinctly below par.

Operation—An incision was made into the right tunica vaginalis, when an inflamed hydrocele was discovered. On moving the finger upwards along the cord it came on a hard mass. The scrotal incision was continued upwards towards the external abdominal ring, and the mass found to be a concretion in the vermiform appendix about the size of a large pea, the tip of the appendix had sloughed and this material had partially escaped. The material had the appearance of being composed of minute pieces of charcoal with a faecal odor, no faeces were present however.

The inguinal canal was next opened up, and then, in addition to the appendix, the remains of a loop of gangrenous small intestine were discovered in the canal. Apparently about two inches of intestine had sloughed away. A new canal, which was continuous with the distal and proximal ends of the intestine, had been formed, and was surrounded by a layer of dark-red pulsatous material but no faecal matter. There was no suppuration or sign of infection by the bacillus coli communis to be made out. As his condition appeared to be fair, resection with end to end union of intestine was performed, the appendix was ligatured and excised, and the patient put back to bed apparently in fairly good condition. I regret, however, to state that he shortly afterwards became restless, and died six hours after operation. No *post mortem* was allowed.

APPENDIX CASES

It has been my fortune to meet with some peculiar appendix cases, amongst which I may mention a case of inflamed appendix in the sac of a reducible inguinal hernia. I was unable to determine whether the patient in this case suffered from a transposition of the caecum and colon or had simply a long meso caecum and meso colon. In a case of right inflamed inguinal hernia where the inflammation supervened on the wearing of a badly fitting truss, the vermiform appendix was found inflamed and adherent to the sac. I have also seen two cases in which the terminal inch or so of the appendix was surrounded by a cap of adherent omentum, the root being quite free from adhesions. In both the tumor resembled an apple on its stalk, and in both the whole tumor was easily removed *en masse*, without cutting into it, as there were no other peritoneal adhesions.

After removal a gangrenous appendix was found lying in very stinking pus surrounded by a thick omental covering

The most peculiar experience, however, I have ever had in operating for removal of the appendix was the following, which I quote *verbatim* from my operation register—

"R A, school boy, 11 years, Eurasian. Operation, 29th September, 1905. Patient has been under treatment in the medical wards since the 7th instant. He was at first under treatment for diarrhoea, but during his stay an attack of acute appendicitis developed. He was seen by me after the acute stage had just passed. There was then distinct tenderness and fullness in the region of the appendix and puffiness of the lower abdomen. The case looked to me like tubercular peritonitis with its chief focus in the appendix. Operation was performed a few days later, Capt Long kindly assisting. The usual 'gridiron' incision was made just internal to the anterior superior spine of the ilium, and the parietal peritoneum opened. Then a glistening transparent sac came into view, exactly like a very thin walled hydrocele sac. This I took to be an encysted ascites and incised it. A finger passed through the incision was found to be inside the urinary bladder. Over a pint of clear urine came away, quite devoid of smell. The bladder wound was immediately closed by means of a continuous, followed by a Lembert's suture, and a soft rubber catheter tied in the urethra. The appendix was then easily found and dealt with. The abdominal wall was sutured in layers. The wound healed by first intention. The catheter was kept in for three days. After operation the daily amount of urine passed averaged from 50 to 80 ounces, the largest amount passed in any one day being 134 ounces. The patient was a poorly nourished boy and evidently suffered from diabetes insipidus. The urine kept quite clear during the treatment.

So much for appendicitis cases. The next case is that of a man who had attempted unsuccessfully to commit suicide by cutting his throat seven months before admission to hospital. When admitted, he had a transverse granulating wound in the neck, a small hole through the centre, which communicated with the oesophagus through the larynx. For some months he had taken all his nourishments through this hole—which was about the size of a No 12 English catheter—as the pharyngeal opening was completely occluded. When seen by me he was terribly emaciated. Gas-trotomy was performed, but too late to save his useless life.

The next patient whom I am pleased to be able to bring before you this evening came under my care in April 1901, with a history of having swallowed his tooth plate some weeks before whilst eating a piece of bread. I have brought the plate with me to show you how very irregular and jagged it is and what facilities it had for becoming firmly impacted.

The plate became jammed behind the cricoid. He went at once to an apothecary who shoved it down and the patient then felt the pain at a spot corresponding with the lower end of the sternum.

The plate was localized by means of a bougie at a point a short distance above the cardiac orifice of the stomach.

Gastrotomy was performed with Colonel Maitland's assistance. Two fingers were introduced into the stomach, but could not detect anything. The incision in the stomach was then made large enough to admit the whole hand except the thumb. After several attempts the plate (which was two inches above the cardiac orifice) was removed by two fingers introduced through the orifice. The wound was then closed, and the patient made a good recovery. He was a very stout man which increased the difficulties of the operation.

A Hindu, aged about 24, came in a few years ago suffering from extensive caries of the spine. He said that his health had been good until six months pre-

viously, when he had fallen off a cart and hurt his back so badly that he had been bed-ridden ever since. On admission he looked like a skeleton with skin drawn over it. This was owing to the fact that he was unable to digest solid food and that for some weeks (or possibly longer) almost all the fluid food he swallowed passed out immediately through a hole in his back. He drank some milk in my presence with the result that all of it passed out through a hole in his back large enough to admit an ordinary lead-pencil.

He died the day after admission. The following extracts are from the *post mortem* register—"Extreme emaciation, marked lordosis. In seventh interspace behind $1\frac{1}{2}$ inches from the mid line, there was a well marked circular opening, through which a bougie could be passed appearing at the mouth. An abscess cavity extended along the spine reaching from the diaphragm below to the body of the fifth cervical vertebra above. At the upper level there was a well marked opening into the pharynx. Below the level of the opening in the back the cavity was filled with stinking pus."

The pathological sequence in this case is fairly obvious and requires no comment.

Another interesting case of abscess was that of a Eurasian, who came in with an abscess which extended from his ankle to his groin. I incised it in several places and drew out several yards of dead guinea-worm which was evidently the culprit. The cavity then closed up rapidly.

Yet another abscess. One morning I opened a large umbilical abscess for a Hindu patient. To my surprise on evacuating it, there came out several small pearl-like bodies. These, I subsequently ascertained, were fishes' eyes which he had inserted into his umbilicus apparently 'for luck.'

A case of mastoid abscess for which I performed a radical operation some years ago did nicely for a few days after operation. Then the patient's temperature suddenly shot up and became of a markedly septicemic type. This went on for two or three days with some rigors thrown in. Horrible visions of lateral sinus infection, abscess of the brain, etc., floated through my mind, but nothing could be found locally to justify further operation. The clue to the enigma came one morning when the student in charge told me that the patient had that day complained of difficulty in passing urine and when, on examining him, I found extensive extravasation of urine which had existed for three days, although he had managed to conceal it from all his attendants and never made the slightest reference to trouble in that direction.

A few words with regard to rare diseases. I pass round some photos of a Eurasian, the subject of *rhinoscleroma*, who was under my care a few years ago.

The case was a typical one, and Capt Cornwall, I.M.S., made several cultures of the bacillus. He also prepared some rhinosclerine, with which the patient was inoculated, but without success.

In addition to its extension towards, and implication of, the larynx, the disease involved the base of the brain.

The patient was discharged from hospital for indecent conduct, was readmitted some weeks afterwards, and again discharged for misconducting himself. He then attempted to drown himself, was rescued, and is now I believe in Jail for the offence.

A case of *Favus*, of which I show you a photo, is interesting, both on account of its extreme rarity here and also on account of the unusual development of the growths on the lips and in the nostrils. Some of these were several inches long and the colour of beet root.

Another photo which I show you is of a patient who was operated on at one sitting for elephantiasis of the scrotum, cancer of the penis, cicatrizing granuloma of the pubes and scrotum, double hydrocele, and left reducible inguinal hernia. He did well.

The following cases of injury are, I think, of interest.—A Hindu boy, aged 11, was admitted in May 1903, with a history of having just fallen from a tree on the sharp ends of some projecting recently cut branches. He had the following wounds (a) One about $4\frac{1}{2}$ inches long an inch below and parallel with Poupart's ligament on the right side. The sartorius muscle was torn across and the femoral artery and vein exposed but untouched. (b) A second wound in the right axilla extended from near the outer end of the clavicle to the posterior border of the axilla, partially tearing the pectoralis major muscles. The axillary artery was exposed but uninjured. (c) A third wound extended from the front of the left ear along the border of the jaw, almost to the symphysis. The middle third of the bone was exposed and several muscles, including the masseter, were torn. The carotid artery just escaped injury, and could be seen pulsating at the bottom of the wound. The muscles were sutured and the wounds closed. All were clean wounds and healed without any suppuration, except a small portion of the groin wound.

The case which I now wish to relate has a melancholy interest for me and cost me several sleepless nights. On 2nd July 1903, assisted by Capt Kirkpatrick, I removed a large bony growth, which involved the anterior surface of the right radius and ulna near the elbow joint.

The operation was a tedious one, and involved much handling of tissues, but apparently went off all right.

On the 3rd morning the arm was seen to be gangrenous, but the patient refused to allow any operative interference whatever. On the fourth morning all the typical signs of spreading traumatic gangrene were present, and the gangrene had spread more than half way up the upper arm. The patient still refused amputation. On the same afternoon I was informed that he had consented to allow amputation to be performed. He was taken to the operation theatre. It was then discovered that the corresponding side of the chest was affected both anteriorly and posteriorly. An incision made into the tissues of the chest showed the typical appearances of spreading traumatic gangrene or malignant oedema. As the case seemed hopeless he was sent back to bed, and 1 in 39 carbolic fomentations applied, frequently renewed.

After a few days of severe constitutional symptoms, the gangrene ceased spreading and the chest improved. On the 10th July, i.e., five days after the first appearance of the gangrene, the arm was taken off at the shoulder. The flaps were left unsutured, the wound swabbed with pure carbolic acid and dressed with gauze soaked in 1 in 200 formalin. A few days later the flaps were sewn and healed up without further trouble. Capt Cornwall made a careful bacteriological examination of the case, and was able to demonstrate the presence of the bacillus aerogenes capsulatus along with some cocci.

On the same morning, immediately prior to the removal of the bony growth, we had removed an appendix, the wound healing by first intention. All the instruments had been boiled and kept in carbolic lotion, and the dressings, etc., had been carefully sterilized. Further, no case of traumatic gangrene or of malignant oedema had been in the hospital for several months.

The case is interesting for two reasons (1) the origin of infection, this, I believe, was through the medium of dust blown in through the open window of the operating theatre; (2) recovery, after the chest wall had become infected.

Cases of gangrene, the result of treatment of fractures by the village potters, used to be frequently met with in the General Hospital. These were usually brought when the only possible treatment consisted in amputation well above the disease.

Two of these cases are indelibly impressed on my mind. Both were cases of gangrene of the leg, the result of tight splinting by potters.

The first patient was a boy of thirteen. Whilst a student was removing the dressings, on his admission, the foot came off in his hands, leaving two inches of the lower ends of the tibia and fibula exposed, and absolutely devoid of all the soft tissues, not even the periosteum being left.

The second case was that of a Hindu man, aged 46. He was taken to the operation theatre at once, whilst engaged in disinfecting my hands, I heard a dull 'thud' on the floor of the operation theatre, turned round, and found that this gangrenous leg, as the result of a struggle whilst chloroform was being administered, had become separated at the knee joint, and had fallen on the floor, or, to put it tersely, he had kicked his leg off.

One night whilst going round my wards, I saw a patient with his arms bandaged, and lying on a pillow, which was deeply blood stained. Enquiry elicited information that his arms had been crushed by the iron cable of a steamer a few hours previously. I had him at once taken to the operation theatre and discovered a transverse groove about three inches wide, which completely encircled the middle of the upper arm. All the structures of the arm at this place had been completely crushed and torn across except the median nerve and the bone. Practically no bleeding had occurred at the time of the accident, and the treatment before I saw the case had consisted in the application of a piece of lint and a bandage to the groove.

Amputation was of course performed at once. And now, Mr Chairman and Gentlemen, I shall conclude by expressing the hope that you have not been bored by the length of time I have kept you. My excuse is that all the cases have greatly interested and edified myself and, I hope, have interested you, that many of them are rare, and a few are, I believe, unique.

A CASE OF CYSTIC KIDNEY

By H. MARIYN NEWION, L.R.C.S.I.,
Scotch Mission, Jatalpur Jattan, Panjab

Jiwa—Age 30

Complaint—Swelling of the abdomen with great pain.

Examination—The man looked ill, pallid and very anæmic. There was a tense swelling on the left side of the abdomen, extending from the flank to a little above Poupart's ligament, the swelling and pain were greatest at the latter position. There was deep fluctuation, no redness, no oedema. Examination as to cause was negative. As the history was of short duration, I took it to be an abscess in the sheath of the rectus, a condition occasionally met with.

Operation—An incision was made in the flank, and sinus forceps passed through the muscles. There was immediately a gush of dark red fluid, of which 356 were drawn off. On passing the finger in, it was found to have entered the abdominal cavity, a small lay of omentum presented, but the intestines were completely shut off. How far this cavity extended, it was impossible to determine.

On search being made for the cause of this condition, a soft flabby substance was felt in the region where one expects to find the kidney, further search revealed a small hole sufficient to admit one finger. This flabby substance turned out to be a cyst of such large size, that I was unable to examine more than a half of it. It

consisted of three or four pockets of fair size, from one of which two small flat stones were removed, weighing about gr. iii. The walls were, in some places, hard and smooth, in others rough, then again in places one could feel distinct fibrous strands.

The nature of the case was, of course, now quite apparent, and search was made for the ureter, what appeared to be the orifice—at the bottom of a long pocket—was found, but I could get nothing to pass down it. As the condition of the patient was such that nephrectomy could not be considered, a large drainage tube was inserted, and the small wound closed.

Microscopical examination of the fluid, of which the deposit was in large quantity, showed blood cells in profusion, but no crystals or epithelial cells.

Remarks—I believe the cyst to have been localized to the lower half of the kidney, as the upper position appeared to be quite normal, it is impossible, however, to be quite certain of this, as the finger could not be passed to the furthest extremity of the cavity in an upward direction. Palpation from above, however, led me to conclude that only part of the organ was affected.

It may be argued that the cyst was one of the spleen. I admit that it is possible, but at the same time, I think the nature of the fluid would show it to be otherwise, viz—(1) An odour different to that of blood and resembling to a certain extent that of urine. (2) The fact that the fluid did not coagulate.

The position, too, of the collapsed cyst, was, I think, too low to have been connected with the spleen. Also the two stones.

Result—On the following day the abdomen was hard and tympanitic, the dressings were soaked. The tube caused a good deal of pain, so was removed, and a gauge drain inserted.

A dose of medicine to relieve the flatulence was vomited, the vomit was of a greenish colour. The condition and facial appearance were far from reassuring, the symptoms pointing too much towards obstruction of the bowel, the operation could hardly account for this. At night a catheter had to be used.

The following day his condition was critical in the extreme, and there was no doubt, whatever, that there was acute obstruction. Operation could not, of course, be thought of in such circumstances. Vomiting continued, and as though with the intention of clearing up matters, a round worm accompanied the vomit.

An enema was given, with negative result. Death took place 48 hours after operation, due I have little doubt to obstruction caused by round worms, a condition which, if I remember rightly, has already been reported in the *Indian Medical Gazette*.

Unfortunately I was unable to make a *post-mortem* examination.

Remarks on cysts of the kidney—In this connection a few words on the above may not be out of place.

Cysts are almost always bilateral, the percentage of cases in which one kidney alone is affected being probably not more than 3 per cent.

In most cases there are urinary symptoms, such as all Indian surgeons are very familiar with. In the above case there were no such symptoms complained of, though, after the operation, I learned that he had had occasional swelling in the abdomen, with a little pain, and also that 16 years previously he had passed a stone.

Malignant tumours may give rise to an unilateral cyst, but in such cases there is almost certain to be hæmaturia and pain.

In certain cases symptoms resemble those of chronic interstitial nephritis, with polyuria, albuminuria, and œdema, circulatory changes, and sometimes uræmia. Acute renal colic may also be an accompaniment.

In this case, the absence of all such symptoms is worthy of note, or if there were any such, they were of minor importance to the patient, for he failed to notice them. Large serious cysts are sometimes found, but so far as I am aware, no case has been reported, in which blood has been the prominent feature.

Was the condition unilateral?—From the nature of the case I am inclined to think it was. Palpation revealed nothing which would make one suspect malignant trouble. Had the other kidney also been involved, there would most certainly have been symptoms of some kind or other complained of.

I regret that no examination was made of the urine, so cannot say whether there was blood in that or not. The condition leads one to conclude that the ureter was not patent, for had it been so the discoloration of the urine would have called the patient's attention to it. I should very much like to know if any readers of this paper have met with or heard of, a like case.

A CASE OF LIVER ABSCESS

By CHANDRA KUMAR DUTTA,

Sylhet

RAM KESHAB SARMA, Hindu male, aged 45, admitted into the Sadi Hospital for the treatment of globular enlargement of liver.

Past history—History of fever about a year ago, which lasted for one month. Slight fever of four days duration about eight days before the onset of the present illness. Habitually constipated, bowels used to be moved once in two days. History of biliary pain. Had not touched alcohol or country spirit during his life. No previous history of dysentery.

History of present illness—About the middle of April last he felt severe pain on the right side

in the region of the liver. It was so excruciating that he used to writhe in bed and lose consciousness with foaming of the mouth. Slight fever present. Dysentery appeared eight days after the onset of pain and a swelling two days before the attack of dysentery. Badly constipated during this attack. Dysentery was of a bad type, 30 or 36 dysenteric stools in 24 hours. Swelling then began to increase. Dysentery lasted for about ten days. Bowels after the dysenteric attack did not respond without purgative.

Present symptoms—Very anæmic, complexion earthy tint, tongue flabby and broad. Slight dry cough with very little expectoration. Liver dullness from the fourth rib to four inches below the costal arch in the mammary line. Swelling most prominent below the costal arch which was rounded in outline. Fluctuation not distinct here, but slight œdema of the skin with fluctuation in the 5 inch space in the anterior axillary line with bulging. Veins of the sides and abdomen not prominent. Nothing particular about the lungs, except that there was some modification of the vesicular murmur at the right base. No friction sound. No marked displacement of the apex beat.

Operation—Placed on the operation table on the morning of the same day. Full anaesthesia could not be done as he was very weak. Major E. A. W. Hall, I.M.S., Civil Surgeon, opened the abscess by incision $2\frac{1}{2}$ inches in length on the anterior axillary line at the 8 inch space and 6 lbs of pus came out. The abscess had formed adhesions. A drainage tube of $\frac{3}{8}$ inch calibre 5 inches in length was put in and the wound dressed antiseptically. The following procedure was followed in each dressing: washing the cavity with iodine lotion ($\frac{31}{100}$ to $\frac{1}{100}$) with boracic lotion (gr x to $\frac{31}{100}$) with equal quantity of warm water. Drainage tube was taken out thoroughly washed in carbolic lotion (1 in 30) and then after putting boro-iodoform ($\frac{5}{100}$ boro-iodoform to $\frac{31}{100}$ boracic acid) both in and outside the tube, it was inserted again. Boracic cotton over the wound and bandage. Dressings were changed twice a day till the 25th, and afterwards once in the morning. Tube was shortened by 2 inches on the 24th June, and it was replaced by one of small calibre on the 3rd July. This was also taken out on 13th July. Discharge from the wound almost nothing from the 28th June. Temperature throughout was normal, except on the evening of the day of operation when it was 97°F . Slight liver pus was noticed in the expectoration on the 18th June and disappeared on the 22nd June 1905.

Diet—Throughout on egg mixture. Milk and sago and milk and rice were added to the diet on the 26th June and a fish stew on the 9th July 1905. He was discharged from the hospital on the 23rd July 1905 as cured.

Remarks—The points of interest in the case are the appearance of dysentery subsequent to

distinct symptoms of liver abscess, whereas the usual history is that abscess occurs after many attacks of dysentery, the absence of any alcoholic history, and the appearance of pus in the expectoration, although the operation had been done and the drainage was free.

A CASE OF ABSCESS OF THE SPLEEN

By DEBENDRO NAIH GUPTA, I.M.S.,

Medical Officer, Baimchi Dispensary, Hughli District

A MUSALMAN male, aged about 42, came to Baimchi dispensary on 24th February 1906, complaining of a large, soft, spleen, from which he had suffered for some years.

History—For several years past he has had fever, of an intermittent type, lasting three or four days, once or twice every month during the malarial season. About two months ago he began to suffer from sharp pain over the splenic region, accompanied by fever, the sharp pains passed off and were succeeded by a dull heavy aching pain. For the last twenty days he had experienced rigors, followed by profuse perspiration, with constant fever, the temperature ranging between 99 and 100 in the morning, between 102 and 103.4 in the afternoon. At the same time the swelling of the spleen increased, till it reached its present size, about that of the foetal head.

Present condition—The upper margin of the swelling is on a level with the ninth rib, the lower margin extends below the umbilicus. The centre of the swelling is soft and doughy to the feel, the margins indurated. It occupies the left hypochondriac region, and is evidently connected with the spleen. Heart sounds weak, but free from murmur, no abnormal breath-sounds, appetite bad, bowels mostly constipated, urine free from sugar and albumen. No history of injury, syphilis, gonorrhœa, tuberculosis or suppuration elsewhere.

Operation—After thoroughly washing the skin of the abdomen with soap and hot water, perchloride lotion and carbolic lotion (1—40), an incision was made over the most prominent part of the swelling, and carried down to its lower margin. On opening the abscess, about three pints, or rather more, thick curdy pus mixed with broken down tissue came out, leaving a large cavity, which was thoroughly washed out with perchloride lotion. A drainage tube was introduced, and the wound dressed antiseptically.

Subsequent history presented nothing remarkable. The dressings were changed according to the quantity of discharge, at first daily, afterwards every second or third day. The patient was fed with good nourishing food, and treated, first with stimulants, afterwards with tonics. Fever entirely ceased after nine days, after which he rapidly picked up health and strength. The cavity gradually filled up and was perfectly

healed in seven weeks. No enlargement of spleen could then be felt in the left hypochondriac region, only a small hard nodule under the last rib.

Remarks—Enlargement of the spleen, hard or soft, due to malarial fever, is very common, but suppuration of the enlarged spleen is rare. How the infection was carried, through the blood stream or lymphatics, is doubtful.

PREPUTIAL CALCULI IN A CASE OF CONGENITAL PHIMOSIS

REPORTED BY SHAMBU PRASAD MFHIA

HOSPITAL ASSISTANT,

Civil Hospital, Ahmedabad

N. J., aged 40, sought relief at the Out-Patient Department of the above Hospital for painful and difficult micturition, from which, with gradually increasing severity, he had suffered for about a year owing to inflammation and increasing constriction of a prepuce which had been in a state of phimosis all his life, but had not given any trouble previously. Before commencing the operation of circumcision I passed a probe with a view to ascertaining whether adhesions existed between the glans and prepuce, and, in doing so, encountered some hard substances which, on sitting up the prepuce, proved to be four calculi weighing in all 189 grains and so faceted as, when placed together, to form a complete mould for the upper surface of the glans penis. The operation of circumcision was completed, and no further difficulty has since been experienced in micturition. A prolapse of the rectum due to previous straining has also disappeared.

SERVICE NOTES

SECOND grade Military Assistant Surgeon A. D. C. Perdur, Assistant to the Civil Surgeon, Jubbulpore, was appointed to officiate as Civil Surgeon, Narsinghpur, *vice* Honorary Captain G. Murphy, I.S.M.D., retired.

MAJOR W. H. W. ELLIOT, I.M.S., attended as a delegate the meeting of the Association of Military Surgeons held at Buffalo, N. Y., in September 1906. Lieutenant Colonel W. G. Macpherson, R.A.M.C., represented that corps. At the close of the meeting Major E. Pilcher, the Secretary, addressing Major Elliot, said—I talk of the Great British Empire, that subject is almost too large for my inadequate tongue, particularly when I realize that the people of a little island in the Atlantic went to the Orient, subdued with hardly more than a corporal's guard the peoples of India and brought civilization out of chaos. We appreciate highly the splendid Indian Medical Service and in recognition of the noble work its members have done, I have particular pleasure in extending to you this diploma of corresponding membership and this insignia which I hope you will wear in our honour.

MILITARY ASSISTANT SURGEON W. W. STUART is appointed Assistant of the Civil Surgeon, Nagpur, C. P.

ON return from leave Captain N. R. J. Rainier, I.M.S., was posted as Civil Surgeon of Chhindwar, C. P.

DR. D. N. P. DATTA, Civil Surgeon, Hoshurpur, obtained privilege leave of absence for one month, under article 260 of the Civil Service Regulations with effect from the afternoon of the 15th of October 1906.

ASSISTANT SURGEON E. PHILLIPS, in charge of the Civil Hospital, Hoshurpur, was appointed to officiate as Civil Surgeon of Hoshurpur, with effect from the afternoon of the 15th of October 1906, *vice* Dr. D. N. P. Datta, proceeding on leave.

ON return from the leave granted to him in notification No. 957, dated the 11th of April 1906, Lieutenant Colonel W. Cortes, M.D., I.M.S., resumed charge of the duties of Civil Surgeon of Lahore, Professor of Midwifery and Forensic Medicine, Medical College, Lahore, and Medical Officer in charge of the Government College, Lahore, with effect from the afternoon of the 13th of October 1906, relieving Lieutenant Colonel H. Hendley, I.M.S., transferred.

MR. J. L. BOCCARO, L.M. & S., Civil Surgeon of Shikarpur, was granted privilege leave for two months, and Asst. Surgeon P. P. Fernandez acted for him.

CAPTAIN H. H. KIDDLER, I.M.S., acted as Professor of Chemistry and Medical Jurisprudence, Lahore, from 9th to 17th June 1906.

ON return from furlough Lieutenant Colonel J. Morwood, I.M.S., was posted to Sultanpur, U. P., as Civil Surgeon.

AN examination of candidates for not less than thirty commissions in the Royal Army Medical Corps will be held on January 24th and following days. Applications to compete should be made to the Secretary War Office, not later than January 14th on which date the list will be closed. Candidates who are over the regulated limit of age at the date of examination will be permitted to deduct from their actual age any period of service in the field after October 1st, 1899, that they could reckon towards retired pay and gratuity if such deduction will bring them within the age limit.

IT is announced that a congress of Military Medicine will shortly be held in Paris. Its declared object is to bring the medical officers of the regular army and the all the officers of reserve into personal and scientific contact with each other.

THE most successful of such reunions is the annual meeting held under the auspices of the United States Association of Military Surgeons. Major W. H. Elliot, I.M.S., D.S.O., represented the I.M.S. at the last meeting.

FOR the convenience of Civil and Military officers desirous of appearing for examination in Oriental languages, the Board of Examiners will in future publish periodically a collection of specimen papers set for the examinations held by them. A collection of papers recently set is now ready for sale—price Rs. 3 per copy—and may be obtained on application to the Secretary, Board of Examiners, 26, Mangoe Lane, Calcutta.

ON the return to Air of Capt. A. F. Stevens, I.M.S., Captain J. Fleming Brindley, I.M.S., was appointed to act as Civil Surgeon of Bhagalpur.

MAJOR C. DUNN, F.R.C.S., I.M.S., Civil Surgeon of Rangoon, and Associate Editor of this Gazette, has been granted three months' extension of furlough.

THE services of Lieutenant Colonel C. N. Bensley, M.B., I.M.S. (Bengal), are replaced at the disposal of His Excellency the Commander in Chief.

CAPTAIN J. H. MURRAY, M.B., I.M.S., Health Officer of Simla, is granted privilege leave for three months, with effect from the 3rd of November, 1906.

CAPTAIN A. W. C. YOUNG, M.B., I.M.S., is appointed to officiate as Health Officer of Simla during Captain Murray's absence on leave or until further orders, with effect from the date on which he assumes charge of his duties.

THE following promotions are made, subject to His Majesty's approval—

Senior Assistant Surgeons and Honorary Lieutenants—

William Henry Cooper	} <i>seconded</i> , to be Senior Assistant Surgeons with the honorary rank of Captain, <i>seconded</i> Senior Assistant Surgeon and Honorary Lieutenant Thomas McDonough, to be Senior Assistant Surgeon with the honorary rank of Captain.
Richard Cumming Debernay	
Prince	
Thomas Kiddle	

First class Assistant Surgeon George Robert Gaudoin, *seconded* to be Senior Assistant Surgeon with the honorary rank of Lieutenant, *seconded*.

First class Assistant Surgeon Septimus George Jackson, to be Senior Assistant Surgeon with the honorary rank of Lieutenant.

Vice Senior Assistant Surgeon and Honorary Captain T. A. Bay, retired, with effect from the 26th September 1906.

Indian Medical Gazette.

FEBRUARY, 1907

THE GREAT VALUE OF INOCULATION AGAINST PLAGUE

THE annual report for the year ending 31st March 1906 of Lt-Col Bannerman, the Director of the Plague Research Laboratory at Parel, Bombay, is one of very great value and interest, we direct special attention to the section dealing with the results of inoculation against plague.

The result of recent research into the etiology of plague far from lessening the value of prophylactic inoculation, has rather tended to emphasize its value as one great practical means of protecting communities against the dread disease.

It is admitted that plague spreads among rats and from rats to man by means of the rat-flea (*p cheopis*), and this is the sole *proved* means. Moreover, it has been shown in the report under reference, that the plague germ is *not to be found outside the bodies of living creatures*, and that it is therefore useless during plague epidemics to disinfect floor and walls in which no living plague germs exist. Endeavour must therefore be directed on the lines of Dr Hossack's recent paper (*Indian Medical Gazette*, January, 1907, p 8) to find an efficient destroyer of fleas. Until therefore a satisfactory method of destroying rats and fleas is discovered the sanitarian must trust to one or other of the two remaining methods of dealing with an epidemic, viz, he must either persuade the people of the afflicted place to leave both rats and fleas behind by evacuating the infected houses, or he must persuade the people to be inoculated and so immunise themselves to a disease which is present around them in epizootic form.

Two excellent papers are published as appendices to this report, one by Capt Percival Mackie, I M S, and another by Dr Winter, which show how quickly the microbes of plague disappear when brought into contact with ordinary saprophytic earth germs, and these results have been confirmed by the experiments of the Plague Commission (see *J of Hygiene*, Special Plague No, Sept 1906, p 518).

The importance of the results of these experiments has not, we think, been fully realised, they dispose of the older theories of a "soil poison" and of the older methods of

disinfection. Attention must therefore be directed to the temporary evacuation of infected houses and to methods of disinfection, which will kill the danger-bearing flea, and the infected rat. There also remains inoculation.

There is a very general unanimity among medical men as to the very great value of inoculation. Its value has been seen from the first and was long ago demonstrated with a wealth of statistics in the report of the Indian Plague Commission, of which Sir T Fraser and Sir A E Wright were prominent members. Of recent years this has been so well recognised that the same care has not been taken to collect, or, if collected, to publish, the results of prophylactic inoculations. Lt-Colonel Bannerman, however, recognises the great educative value of repeatedly published statistics, and in the present report has brought together a remarkable mass of evidence, unanimous as to the much lesser case-incidence and lesser case-mortality in inoculated communities, and unanimous as to the absence of any ill after-effects of inoculation. It also appears that there is a very general opinion among those who have largely used the prophylactic that the protective effect lasts from 6 to 12 months, that is, over at least one whole plague season.

It is impossible for us even to summarise the reports here collected in favour of inoculation. They run to some eight pages of Colonel Bannerman's report and have been sent in by Civil Surgeons, Medical Officers of Regiments, Superintendents of Jails, Medical Missionaries, and Assistant Surgeons from all parts of India and Burma.

The saving of life by means of inoculation is strikingly shown by the following figures reported by the Executive Health Officer of Bombay. Of the Health Department Labour Staff 7,182 were inoculated, there were only 13 deaths from plague, a percentage of 0.18, whereas in the 418 non-inoculated members of the staff there were no less than 26 deaths from plague or a percentage of 6.02 (as contrasted with 0.1), or a difference of 97 per cent in favour of the inoculated.

Lt-Col Bannerman also quotes the very striking results of the protection afforded by inoculation to the prisoners in the jails of the Bombay Presidency. Major J Jackson, I M S, the then Officiating Inspector-General of Prisons, published a notable contribution to the literature of anti-plague inoculation. We cannot quote

much of it in the space at our command, but we note that in 1897 with a daily average population in jail of 8,392 prisoners there were 43 cases (and 27 deaths) from plague, while in 1904 there were only 8 cases and 5 deaths "As inoculation" (writes Major Jackson) "has been more and more resorted to in the prisons, so the incidence of plague and death-rate has diminished," plague in fact has been banished from Bombay prisons, and as a factor in mortality it has "sunk to the level of measles," even the people in Dhawai are saying "the prison is the only place plague does not go to"

We are not disposed to attribute this wholly to the good effects of inoculation. Plague must needs be constantly introduced into Jail Segregation Wards by new arrivals, that it does not spread or remain is due to the high sanitary condition of the jails.

Major Jackson also shows that no ill-effects follow inoculation, in fact in one group of 236 inoculated prisoners and 236 non-inoculated prisoners it was found that the inoculated prisoners so far from being the worse for the inoculations actually put on more weight than the non-protected!

We commend this report to the attention of all medical officers and we earnestly invite them to do all they can to encourage anti-plague inoculation in the communities among which they work. The striking life-saving value of inoculation is known and admitted by all who have studied the question. It is the only ready, tried and prepared method we have for fighting plague. Let it be used now, and not wait to get rid of plague when the sanitary condition of Indian towns and villages has reached a European level. This we hope may come in time, meantime lives can be saved by anti-plague inoculation.

For facts and figures to convince the few remaining sceptics we recommend a perusal of Lieut-Col Bannerman's Report.

NEW VIEWS ON GOITRE

In the *Lancet* (for December 8th, 1906, p 1577) there is a very interesting and important paper by Captain R. McCarrison, I.M.S., on endemic goitre which will attract wide attention.

This paper is a continuation of one sent in April last to the Royal Medical and Chirurgical Society, in which Captain McCarrison drew the following conclusions in support of his view that goitre is an infectious disease —

"(1) That water, if it is the chief vehicle of infection, is not the only one (2) That it is to no dissolved ingredient in water that goitre is due (3) That the results of all experiments on dogs in Gilgit were constantly negative (4) That the increased prevalence of goitre in the villages in the lower parts of the Gilgit fan was, in all probability, due to the increased impurity of the water lower down the fan (5) That the people of Brumis, although living on the Gilgit fan, do not suffer from goitre (6) That goitre is constantly associated with limestone rocks in Chitral and Gilgit (7) That goitre can be rapidly acquired by susceptible individuals in goitrous districts, the minimum period of residence necessary being from three weeks to one month (8) That in Nagai an epidemic of this disease is commencing and that children are first affected (9) That there is considerable ground for the belief that in the indigenous inhabitants of the goitrous locality a natural immunity to the disease is produced after several generations (10) That removal from a goitrous district causes a disappearance or reduction in size of symmetrical enlargements of the gland, the extent of the reduction being dependent on the age of the goitre and the presence or absence of secondary changes (11) That the enlargement of the gland will disappear while the patient is still under goitrous influences if thyroid gland extract is administered by the mouth. It is the purpose of this communication to record such additional facts and observations as may, it is hoped, when taken in conjunction with those which I have already brought forward, remove any doubt as to the infective nature of endemic goitre"

There seems to be little doubt that there is a seasonal prevalence of goitre, especially in the spring months. Other factors, such as grief, shock, and attacks of fever "markedly favour," writes Captain McCarrison, "the production of the disease." Difference of race does not appear to play any essential part in the affection, the white officers of the Gilgit Agency have always escaped, but this may be due to their better sanitary surroundings only. Occupation is a factor of importance. The labouring classes and all whose work brings them in contact with soil contract the disease easily, while clerks and Indian sepoy of the regiments there suffer but little.

The Gilgit river water is hard, and its total solids are seven grains per gallon, the calcium is six grains per gallon and sulphates three. This water is pure, and the use of this river water does not seem to give goitre, whereas those who drink the water which passes over the irrigated fields do suffer. Captain McCarrison maintains that goitre is due to "no dissolved ingredient in the water," and that "if water is the chief vehicle of infection, it is not the only one." He admits that water is, in Gilgit, as a rule, the vehicle for the organism

of this disease, thus far he is in agreement with the older writers. Boiling and filtering the water and care taken to see that only boiled and filtered water is used, has had no effect on the incidence of the disease. That there is something in the water, especially when it is impure at the time of irrigating the fields seems clear, and Captain McCarrison gives evidence to show that this something is a micro-organism, probably a sporozoon. There would appear, he writes, to be three factors, the geological origin of the soil which is limestone rocks, the dampness of the soil, and the slope of the ground.

A large number of blood examinations in goitre cases have been made at Gilgit, but nothing has been seen of the hæmatozoon described by Giasset in 1898, a relative diminution, however, in the numbers of the polymorphonuclear leucocytes and a relative increase in the mononuclear elements of the blood is found, this seemed to Captain McCarrison to suggest an intestinal origin of the disease, and led him to try intestinal antiseptics in selected cases, with the result that he now is able to state that he has cured 25 cases of goitre by means of thymol, in periods from 17 to 60 days.

He gives thymol as follows, thirty grains on the morning of first day of treatment, followed by a purge, after which ten grains morning and evening are given in cachets, and a larger dose of thirty grains twice a week, followed by a purgative. The treatment is kept up without intermission till the swelling disappears. No ill-effects have followed this free use of thymol, a fact which practitioners in India, who have experience of the value and freedom from danger of large doses of thymol in ankylostome infection, are well aware of. Betanaphol, which was found so useful by Dr Bentley in ankylostomiasis has also been found useful in goitre. It must be understood that cases of recent origin are most quickly benefited, when secondary changes have taken place in the gland it is not to be expected that it will be so easily reduced in size.

Captain McCarrison figures and describes an organism which he met with in the fresh feces of all cases of goitre. More evidence for connecting goitre with an infection through the alimentary tract will be demanded, but we must acknowledge that Captain McCarrison has made out a good case, and if he can show that this sporozoon is not found in non-goitrous persons and is not found where goitre is absent, he will have done much towards establishing his views

on the infectious nature of the disease. We may quote in conclusion the arguments in which Captain McCarrison sums up the evidence in favour of his contention.

"(1) Goitre is caused by an organism invading the body of man. All the evidence so far accumulated points to the intestine as the seat of infection. (2) In nature it lives in the soil of infected localities and is very limited in its distribution. (3) It is conveyed to man in the drinking water, by contact with soil, or by other means yet undetermined. (4) It requires a calcareous soil to enable it to flourish and produce goitre. (5) It can be conveyed by man to places where the disease has not hitherto prevailed and, if the conditions are favourable there, it can produce the disease. (6) The virus is, therefore, given off by persons suffering from the disease in some way as yet undetermined, but not unlikely by means of the feces. (7) The fact that it requires peculiar conditions of soil, &c., suggests a stage of development outside the body of man. (8) There is reason to believe that it is destroyed by admixture with pure water. (9) The organism flourishes best where there is a certain degree of moisture. (10) The organism requires a certain temperature, in all probability, to favour its development. (11) Where it gives rise to an epidemic the most susceptible individuals suffer most and first—namely, the children. (12) There is reason to believe that where the disease has prevailed for years a natural immunity is developed. (13) Those who come into close contact with the soil in their daily occupations suffer most. (14) Newcomers to a district acquire the disease very rapidly, from three weeks to one month being the minimum incubation period of this disease—20 per cent of newcomers suffer. (15) Goitre shows a marked seasonal prevalence. (16) Goitre disappears when the patient leaves the infected area and cannot arise in the new area to which the patient goes unless the above conditions for the growth of the organism are present—calcareous soil, moisture, virus of the disease, and susceptible individuals. (17) The duration of life of the organism in the body of man is not great, as shown by the fact that the gland diminishes in size when the patient leaves the infected area. (18) An organically impure water may favour the spread of the disease. (19) All races suffer. (20) Women suffer more than men. (21) Certain conditions, such as emotional disturbances, attacks of fever, &c., act as predisposing or favouring causes. (22) Boiling and filtering the water alone do not prevent or cure the disease so long as people live on the infected site. (23) Domestic animals do not suffer from goitre or cretinism in Gilgit. (24) Large communities living on the infected site often escape, groups of houses also escape the disease. (25) Certain blood changes occur in goitre of an uncertain nature, but suggesting, from analogy with other disease, a parasitic or bacterial invasion of the intestine. (26) Goitre is rapidly cured by the administration of intestinal antiseptics.

It appears, then, that the disease, of which the enlargement of the thyroid gland is the external indication, differs little from other diseases of an infectious nature. The enlargement of the thyroid is not in itself the disease. In its beginning it is a pure hypertrophy, a protective increase in size, comparable to that of the

spleen in certain other infectious diseases, and, like the spleen, it returns to its normal size when the causes which have stimulated the exercise of the gland's protective function have been removed.

To sum up, then, I regard goitre as a general disease of an infectious nature in which the seat of infection is most probably the intestinal tract and of which the enlargement of the thyroid gland is the dominant symptom.

We congratulate Captain McCarrison on his work. The subject of goitre is one which has been too long neglected in India and no work of importance has been done on the subject since Macnamara wrote his book on water-supplies in India.

Current Topics

THE PASTEUR INSTITUTE OF SOUTHERN INDIA, COONNOOR

The Pasteur Institute of Southern India is situated in Coonnoor on the Nilgiri Hills, at an elevation of about 6,000 feet.

Coonnoor is a municipal town with about 6,500 inhabitants, and at present is the terminus of the Nilgiri Railway. A mile distant is the cantonment of Wellington. It is on the eastern side of the Nilgiris and has a somewhat humid climate with a rainfall of about 70 inches, part of which is derived from the South-West monsoon and part from the North-East monsoon. The maximum air temperature seldom exceeds 80° F and the minimum is not often below 45° F.

The Institute was partly built and equipped with the sum of one lakh of rupees which was allotted by H. E. the Viceroy out of the donation of Mr. Henry Phipps of the United States. Further expenditure is being met by the Government of Madras, who will hand over the building free of debt to the Central Committee of management, on whom will fall the duty of raising subscriptions for its up-keep and working expenses. The management is similar to that of the Kasauli Institute.

Surgeon-General W. R. Browne, C.I.E., I.M.S., is the President of Committee, and the Director of the Institute is its Honorary Secretary and Treasurer. The main building is a two-storied block without verandahs or porch, with an octagonal turret at each corner and a projecting room at each end. Total length 144 feet, total width 64 feet. A corridor 10 feet wide runs along the centre into which the rooms open, the main and back entrances being at right angles to this. On the ground floor are the clerks' office, patients' waiting room, inoculating room, sterilization and media room, rabbit room, room for inoculation and removal of cords, dark room, surgery, microscope room and Director's office. Upstairs are the store room, library and a

laboratory room, together with quarters for the Assistant Director, consisting of drawing and dining rooms, study room, store room, three bedrooms and bathrooms. Downstairs the flooring is of cement, which will be covered with linoleum in the rooms and matting in the corridors. Upstairs the floors are of teak. The greater part of the furniture has been made in the Coimbatore Jail. Water is laid on from the municipal main to both the upper and lower floors, and Mansfield's oil gas apparatus has been installed both for laboratory use and for lighting.

The outbuildings consist of quarters for a Hospital Assistant, lines for a few indigent native patients, servants' lines, four rabbit houses, stables, stores and godowns, dog kennels, incinerator and gas house. The compound is about 6 acres in area, but this may be extended when the drainage works are sanctioned by the addition of a small sewage farm. The buildings were to have been finished by August 15th, 1906, but numerous delays, such as are probably familiar to many of our readers have occurred, and they will not be ready for a little while longer. Meanwhile, the apparatus is arriving and matters are being pushed on as rapidly as possible, and if no unforeseen trouble arises in connection with the fittings or with the supply of rabbits it has been announced that a beginning may be made by March 1st at the earliest. Our readers are nevertheless cautioned that patients should not be sent to Coonnoor until a definite notice has been issued, that the institute is ready for them. A few have already made the journey from long distances under the misapprehension that they could be treated there, but they had to be sent on to Kasauli and valuable time was thereby wasted. There is ample hotel and boarding house accommodation in Coonnoor.

THE REPORT OF THE PLAGUE RESEARCH LABORATORY, BOMBAY

We have in another column commented upon the very interesting report by Lieutenant-Colonel Bannerman on the work done in the Plague Research Laboratory. Plague, however, is not the only subject attended to, and in this report we have much of interest on other subjects.

An outbreak of *Surra* among the horses of the Bombay Mounted Police afforded an opportunity of studying this disease. We quote the following remarks *in extenso*—

"To the inhabitants of the Western side of India, the discovery by Colonel Bruce and his colleagues of the Royal Society's Commission, that the Sleeping Sickness of Uganda was caused by a species of *Trypanosome*, is of the utmost interest and importance, for, the intimate and increasing commercial intercourse between the Bombay Coast Ports and Mombasa, must result sooner or later in the importation of cases of that disease.

That an animal disease caused by a *Trypanosome* exists here, impels one to ask whether the similar

human infection, if introduced, might not likewise spread and flourish amongst us. As it has been proved that Sleeping Sickness is spread by a species of Tse tse fly from one patient to another, it seemed wise to try to find out if any such flies existed in India. The only information on this point forthcoming after much correspondence was, that "Stomoxys and Glossina [two genera of the muscidae to the latter of which the Tse tse flies belong] are not at present known to occur in India" (Superintendent, Indian Museum, Calcutta, Nat Hist Section). The Entomologist to the Government of India also could not say whether Stomoxys or Glossina would be found in India but thought that the former might be present as it is mentioned in Rigot's catalogue as being known in Ceylon. He kindly sent his Fieldman to Bombay at my request, but as it was then the hot season, no biting flies could be found. On subsequently proceeding to Assam, however, this collector discovered a species of Stomoxys and on his return to Bombay in September 1905, at once found them prevalent here also. This was an important discovery, for, a Trypanosome disease of horses known in South America as Mal de Caderas, is spread by flies of the genus Stomoxys. It was with these flies that most of the experiments in this Laboratory noted above were made.

It seems desirable therefore that a thorough study of the distribution of Surra on this side of India should be undertaken and a collection of all the biting flies present in such localities made. For, not only is it probable that thus the cause of the spread of Surra would be discovered, but also incidentally it may be found that Tse tse flies are present in some parts of India. In any case, it seems prudent to arrange for experiments with the common biting flies of Bombay to discover whether any of them perchance might be capable of transmitting Sleeping Sickness.

Should no flies capable of transmitting this disease inhabit India, then it is, relative to the public health, a small matter if Sleeping Sickness arrive on our shores, for it could not spread beyond its original victims and no epidemic would ensue.

The matter having been represented to the Surgeon-General, he was pleased once more to draw the attention of the authorities to the danger of the introduction of Sleeping Sickness, and they have ordered that the inspection of all passengers, arriving in the Bombay Ports from East Africa instituted by Government of India (Government Resolution, No 4634, General Department, dated 3rd September 1903) be conducted, so that any passengers with enlarged glands may be particularly searched for, this condition having been shown by Captain Greig, I.M.S., to be the earliest sign of the disease.

We are well pleased to observe that a class has been formed in the Laboratory for the instruction of hospital assistants in modern methods of clinical investigation.

The Research Laboratory is also the Provincial Laboratory and as such it is now formally empowered to undertake "diagnostic and research work for medical men in the Bombay Presidency," a function it has actually been discharging ever since its commencement.

The work done in this Laboratory by Major Lamb and Asst-Surgeon Kesavi Pal, in proving the existence of Malta fever in many parts of Northern India has already been noticed in our columns, and the present report records the fact that the blood of two native patients from Belgaum reacted strongly to the *M melitensis*. This is of great interest in showing the exist-

ence of this disease in that part of Southern India.

The following note on the bacteriology of milk in connection with infantile diarrhoea is of special interest —

Specimens of milk from the Bai Motlibai Hospital were sent with a view to discovering if possible the cause of an outbreak of infantile diarrhoea, and the following is condensed from the report of Captain Mackie, I.M.S., who conducted the investigation. The experiments lasted over a period from September 7th, 1905, to October 26th, 1905, and during that time eleven samples of diarrhoea stool were examined. In nine of these a bacillus, *B. enteritidis sporogenes* (Klein and Andrewes) was found, and in every case it proved highly fatal to guinea-pigs on subcutaneous inoculation. Of these nine patients, five died. In two cases (both of which recovered) the *B. enteritidis sporogenes* was not separated. The procedure was the same in all cases. Portions of the faeces were placed in tubes of sterile milk and heated to 80° Centigrade for one hour. The tubes were removed, cooled and placed under rigid anaerobic conditions at 37.5° C till the following day. The action of this particular bacillus produces characteristic appearances, the milk is firmly coagulated and is split up into fragments and masses which are driven right up to the wool plug by the rapid production of gas. There is a smell of butyric acid and the whey is found to contain a Gram-positive bacillus, sometimes sporing and always motile. If 0.2 c.c. of this whey be injected into a guinea pig subcutaneously, the animal dies in from 16—30 hours with the production of intense local inflammation and necrosis with gas formation. The same bacillus is recoverable in pure culture from the exudate. It grows readily in milk, but with difficulty on agar and in broth and only under strict anaerobic conditions.

As the bacillus was found with a considerable degree of constancy in the stools of the infants, attention was next directed to the milk supply of the hospital. Ten samples of milk were examined without further filtration or concentration and were heated as before to 80° C for an hour. Seven of the samples showed the presence of the same organism, fatal to guinea pigs. The dairy was then visited and various samples of water taken from the supplies used for drinking, pail washing, hand washing, animal washing and yard washing and washing of the milkman's hands and such like suspected sources. Without going into details, good evidence of contamination was shown under the conditions obtaining at the dairy and with the consent of the Physician in charge of the Motlibai Hospital, a list of directions was given to the dairy owner for future guidance.

The blood of several affected children was tested as regards its agglutinative effect on emulsions of the *B. enteritidis sporogenes*, but it was only found to give a reaction in dilutions not higher than 1 in 10. It is probable that the agglutinins do not appear early enough to make the test of any value.

The subsequent history of the epidemic showed that it rapidly subsided up to a point, but that occasional cases continued and still continue.

The attitude of Bacteriologists towards the *B. enteritidis sporogenes* is not a unanimous one, many consider it an organism of high potential virulence and responsible for severe outbreaks of diarrhoea, whilst others look upon it as a constant and harmless intestinal saprophyte, useful as an index of sewage contamination of water, but not otherwise of importance.

The following note on the value of rival disinfectants is worth republishing —

"Estimation of the bactericidal power of "M D dark fluid" and "M D cream fluid" were made in accordance with orders from the Sanitary Commissioner with

the Government of India, and of Izal at the request of the Inspector General of Civil Hospitals, Burma.

The technique employed and the results got with a large number of other disinfectants will be found published as an accompaniment to Government Resolution No 1686 P, General Department (Plague), of 8th September 1905.

According to these experiments, the disinfectants may be arranged as follows, in order of effectiveness as regards the plague bacillus—Perchloride of mercury (1 40,000) Cyllus special fluid (1 4,000), M D dark fluid (1 2,000) Formaline (1-1,000), Izal (1 500) and Lysol (1 200). The figures in brackets indicate the minimum strength of the solution, required to kill the plague germ with certainty under the conditions of the experiment.

The following extract on a case of cure of a bite by a Russell's viper by the new antivenene is of much interest—

"Sultan Chand, the laboratory snakeman, was unfortunately bitten on the left forefinger by a Russell's viper when manipulating it. The snake took a firm hold and had to be shaken off. Fortunately a supply of antivenene specific for the venom of this viper was available, and was promptly administered by Major Lamb, I.M.S., who had himself made it at Kasauli. The result was very gratifying, for Sultan did not develop any constitutional symptoms of poisoning, though the finger became gangrenous below the site of the bite and had to be amputated. This is believed to be the first case in which a man bitten by a Russell's viper has been treated by this new specific antivenene."

Several appendices add to the value of this interesting report. We have already referred to the papers by Captain Percival Mackie, I.R.C.S., I.M.S., and Dr Winter, on the short vitality of plague germs in artificially infected earth. Another appendix is on Dr Maynard's "decanting and bottling apparatus," another by Dr Martland Gibson on the apparatus for testing the sterility of vaccines under anaerobic conditions.

A description and illustration is also given of Kapadia's useful lamp for sterilising syringes. This lamp only costs about Rs 2-13, and should be of great use to Civil Surgeons, not only for purposes of anti-plague inoculations, but for sterilising hypodermic syringes, especially we should say when used for the intramuscular injections of mercury for syphilis or of quinine in malarial fever cases.

TRYPANOSOMATA AND TRYPANOSOMIASIS

We have received an admirable paper from the *Journal of Medical Research* (Vol XV, No 1, July 1906) by Dr E N Tobey, of the Harvard Medical School which gives a complete summary of what is at present known of the important protozoa known as trypanosomata. The word trypanosoma was coined by Giuby of Paris in his description of this parasite in frogs. It is from the Greek *trōpāion* an angle, and *σώμα* body. The first trypanosome (to give an English and useful ending to the word) was discovered by Valentine of Berne, in 1841. Many of the parasites were discovered in fishes and frogs, and in 1878 Surgeon-Major Timothy Lewis

described trypanosomes in rats, and thus drew attention to their existence in mammals.

In 1880 Evans discovered the trypanosome of *Surra*. In 1896 Rouget described the organism in the blood of a horse suffering from dourine, and in 1897 Colonel D Bruce, R.A.M.C., described the organism of Nagana. Trypanosomes, according to Dr Tobey, belong to the Kingdom, Animalia, sub-kingdom, Protozoa, class Mastigophora, sub-class flagellata, order, Monadida, family, trypanosomidae, and genus, trypanosoma.

The flagellata are the only sub-class of Mastigophora which at present comes into consideration as parasites. The family trypanosomidae (Doflein, 1901) at present contain two genera, viz (1) trypanosoma, one flagellum, extending from the centrosome along the undulating membrane and becoming free at the anterior extremity, (2) trypanoplasma, two flagella, one extending anteriorly, one posteriorly. Genus trypanosoma, body fusiform, lateral longitudinal undulating membrane, the thickened border of which terminates posteriorly in a centrosome, and is prolonged anteriorly in a free major flagellum, nucleus generally anterior, division longitudinal and unequal. It is parasitic in the blood of animals, type species, trypanosoma rotatorium. Trypanosomiasis is the disease caused in animals by this genus of parasites. The general symptoms are after a period of incubation, a remitting, intermitting or sometimes relapsing fever, trypanosomes are found in the blood, (in some animals in proportion to the fever), progressive anemia, and emaciation, catarrhal condition of mucous membranes of eyes and nose, roughness of hair, subcutaneous oedema, especially of legs, genitals and belly, in later stages paresis of posterior extremities.

Trypanosomes are found in worms, in arthropoda as flies, gnats, lice, fleas, in fishes, (a large number of species are found in fishes in all countries). They are also very common in frogs and newts, in reptiles such as turtles, lizards and snakes.

In birds they are well known and have been fully described by Danilewsky and Laveran in Europe, by Dutton and Todd in Africa and by Hanna in India, and are well described in a work by McNeal and Novy (1905). In mammalia, though known before, it was the work of T Lewis that attracted attention to these parasites. Lewis found them in the brown rats of Calcutta, and the parasite *T. Lewis* has since been found in every part of the world. Trypanosomata have also been found in the guinea-pig, the hamster, rabbit and mole.

In horses there are five well known forms of trypanosomiasis, viz (1) Nagana (the well known pest of S Africa due to the parasite called after its discoverer *T. Bruce* and spread by the bite of the tse-tse fly *G. morsitans*), (2) Surra, the horse disease of India, due to *T. Evans*, the disease is well known in Annam, Korea, Persia, Java, Philippines, Egypt, Chili, S America,

N America and Australia. It is spread by flies, *tabanus tropicus* and *stomoxys calcitrans*, (3) Douvine, common in Syria, Algeria, France, Germany, U States, &c, caused by *Th equiperidum*, spread by coition, rarely by flies, (4) *mal de cadenas*, limited to South America, caused by *Th equinum*, a fatal rapid disease infection by biting insects, especially in the rainy season, (5) the horse disease of Gambia, discovered by Dutton and Todd in 1890 in Senegal horses. Caused by *Th dimorphon*. Spread by *Glossina palpalis* probably.

Galzeikite is a disease of cattle, epidemic in the Transvaal. It is produced by a distinct organism, *Th theleri*. It is spread by hippoboscæ *rufipes*, which is very common in S Africa. Sleeping sickness is now said to be caused by the *typanosoma gambiense*, and fortunately so far it occurs in Africa only. It was first described by Winterbottom in 1803. The first modern account of the disease was by Dutton and Todd in 1902. In every case of sleeping sickness the organisms are found in the blood, the cerebrospinal fluid, or in both. There is a very evident connection between cases with slight symptoms and those with symptoms of an advanced stage. The latent period may be as long as from two to five years or even longer. The change from the latent stage to the advanced condition is very gradual. The duration of the disease after its recognition by friends is from two to four months. The disease has many complications, as meningitis, pleurisy, pneumonia, gangrene of lung, caseating glands, dysenteric ulceration of the bowel. The infection is spread by *glossina palpalis*.

AMŒBÆ AND THEIR SIGNIFICANCE

We have often referred to the good work done by Dis Musgrave and Clegg in the Biological Laboratory, Manila, and we have now before us a very valuable monograph, (No 9, Vol 1, *Philippine Journal of Science*, November 1906) on the cultivation and pathogenesis of amœbæ.

The recent work of the late Prof F Schaudinn on the amœbæ attracted great attention and his attempt to establish a new genus *Entamœba*, of which he described two species, *E Coli*, and *E histolytica* has been quoted by all and very generally accepted, and Dr C F Craig has gone further and proposed *Entamœba dysenteriae* as the name for the pathogenic species and *E Coli* for the other, that is he divided them into two species, one pathogenic and the other harmless*.

As a result of their continued study of amœbæ, Dis Musgrave and Clegg state that they cannot avoid questioning the justification for establishing two species, *E Coli* and *E histolytica*, and they consider the data to support

the view that one species is harmless are insufficient.

The Manila workers point out that there are three or probably four methods of reproduction of amœbæ, viz, simple fission, "budding", encystment, and the rupture of the cyst and the escape therefrom of a single motile amœba. Other distinctions between amœbæ have been described—they refer to size, colour, shape, motility, number, size, shape and contents of pseudopodia, ectoplasm, endoplasm and nucleus.

As regards the size of amœbæ as a whole, they vary between wide limits, such measurements are unreliable as a test of species, and are only useful if they could be made with parasites of equal age and in the same environment.

Then again colour. Schaudinn and his followers have laid stress on colour as a means in the differentiation of these protozoa. A variation in colour is certainly noticeable, but Musgrave and Clegg consider it rather "an index of environment," e.g, an increased greenish refractiveness appeared in the parasites as the character of the stool changed from the watery diarrhoeal discharge of the early stages to the dysenteric stool of a more established infection. In the bloody mucous stool the greenish colour of the amœbæ is often quite pronounced, but as the case goes on favourably with the disappearance of the blood this colour is gradually lost, and during convalescence amœbæ of a dull gray or opaque appearance are met with, again as bile disappears from the fæces the dull gray colour follows the marked greenish refraction of the amœbæ. Moreover colours can be changed in cultures. In a healthy intestine or in an early stage of the disease amœbæ are very likely to have a grey colour, regardless of the pathogenicity of the rhizopods.

As to shape and motility our authors show that "all amœbæ assume a great variety of shapes when in motion, but when at rest or encysted, they are invariably spherical or slightly oval. The formation of pseudopodia is probably a common property of all amœbæ and the size, shape and number of the pseudopodia vary within wide limits.

As regards the ectoplasm, this elastic structure varies in thickness, and is distinctive probably only in the full-grown parasite, in young amœbæ a distinction between ectoplasm and endoplasm is rarely demonstrable. The proportionate amount of endoplasm as compared with the whole parasite varies with the environment and the stage of the life cycle in which the observation is made.

It will be remembered that one of Schaudinn's strongest points of differentiation between *E. Coli* and *E histolytica* was founded on observations on the nucleus, in *E histolytica* the location of the nucleus was always eccentric, the shape round, of small size or not visible, the chromatin, and the nuclear membrane indistinct, whereas in *E Coli* the picture was almost the complete opposite, but Musgrave and

* See an excellent summary of recent literature on this subject in the Report of the Sanitary Commissioner with the Government of India under heading "Jails," (1905 Report)

Clegg are of opinion that these qualities are common to all amoebæ, the nucleus is probably present, they say, in all amoebæ, it may be difficult to see or impossible to see and it may be found at one time and not at another. It may be spherical, oval, vesicular, or irregular in outline, it may be situated centrally or eccentrically, and it varies in size as well as in the amount of chromatin.

The authors summarise their conclusions by saying that "we have failed to follow Schaudinn and others in their species differentiation, and many important premises on which their conclusions were based are not borne out by our work. It seems to us that more work must be done before a satisfactory classification of these protozoa can be made, and until such a time we believe we are fully justified in retaining the name *Amœba coli* Losch, to represent those amoebæ which are found in the intestines of human beings."

The general plan of cultivation adopted by Musgrave and Clegg is the same as that announced in their first publication on this subject. Amoebæ can easily be grown from water, soil, vegetables and other extraneous sources. It is somewhat more difficult to cultivate them from the intestines of man or animals, it is still more difficult to cultivate them from liver or other tissue abscesses. Pure cultures of amoebæ, which will continue to propagate in media free from other organisms have not been obtained by these workers, amoebæ are always associated with other micro-organisms and experiments have demonstrated that a more or less definite symbiosis exists between the parasites and some other organisms, usually bacteria. In the intestine such a bacterial symbiosis is still more definite and select.

"This specificity of the bacterial symbiosis increases with the parasitism of the amoebæ until, sometimes in the bowel and usually in the liver and other abscesses, the bacterial symbiosis is eliminated and the amoebæ assumes the role of a strict parasite living directly at the expense of the host."

Our authors further state that they have not found amoebæ as prevalent in the stools of human beings in Manila as has been reported by others, and they consider that the presence of amoebæ in a healthy bowel is not a convincing argument against the pathogenicity of these parasites, they state that amoebæ may be present in the stools of persons "who give no clinical evidence of disease," firstly, because the incubation period of amoebiasis may be several months, secondly, cases are cured, yet on death from another disease amoebæ are found at the autopsy, thirdly, they hold it "conclusively proved" that a patient may "recover from amoebæ infection without having shown any external symptoms of the disease during life, the fact of amoebæ infection only being confirmed by autopsies," when the patient had died from other causes. Indeed (say they), "the

presence of scars and other evidences of a healed antecedent amoebæ, ulceration of the colon is quite a common *post-mortem* finding" in the Philippines. Moreover, it is probably true, our authors go on to say, that in a certain number of cases "amoebæ continue to multiply in the human intestine for days, months or possibly years, without ever producing ulceration of the bowel."

This admission, coupled with the above statement that amoebæ infection may occur without any external symptoms of the disease throughout life, surely also fits in with the view of those who look upon the amoebæ as "harmless."

In fact, the case seems to be somewhat similar to the reputed harmfulness of the ankylostoma duodenale. Both that hookworm and the amoebæ are fairly common in persons reputedly and to all appearance healthy, yet it is not denied by anyone that both parasites may produce disease or greatly aggravate other diseases present, and in both cases the primary difficulty is to define the word healthy person.

It will be agreed that, whether we accept the view of Drs Musgrave and Clegg that "all amoebæ are, or may become pathogenic," or those of others that all are harmless, or that they are both harmless and pathogenic amoebæ, the study of these rhizopods has been largely advanced by the work done in the Manila Laboratory, and it remains for the followers of Schaudinn to reconsider his views as to the differentiation of species.

We would welcome some work on this subject from our Indian Laboratories. We are still in almost complete ignorance as to the degree of prevalence of these protozoa in India.

THE SERUM TREATMENT OF DYSENTERY

LIEUTENANT S E LEWIS, R.A.M.C., reports six cases of dysentery treated by anti-dysenteric serum, apparently the disease was bacillary, and no amoebæ were found. The serum used was prepared at the Lester Institute and obtained from horses highly immunised against the dysentery bacillus of Shiga and Kiuse and its toxins (*Journal, R.A.M.C.*, November 1906).

1st case—(No hint is given in the paper of the locality of the cases, it is not even certain from the paper that they were in India). A severe case, patient very ill, delirium, frequent motions, serum given second day 20 c.c. hypodermically in abdominal wall (also given Ipecac gr X). Improvement followed within 24 hours, stools not free from blood and mucus till sixth day. Intensely irritating measles like rash on ninth day, which lasts for two or three days. Apparently only one dose of serum given.

2nd case—Diarrhoea with blood and mucus severe for two days. Given 20 c.c. serum. Tenesmus not gone altogether till end of third day, blood continued with severe diarrhoea for six days. Again the irritating rash. Practically well on eighth day.

3rd case—Two days ill, blood and mucus. Is anæmic. Tenesmus. Given Magnes Sulphate, 3ii four times at night, and this treatment continued for six days with no benefit. On sixth day 20 c.c. serum injected, three days later much better, but diarrhoea continued for

nearly a fortnight. Slow convalescence, relapse two weeks later. Serum again injected, symptoms ceased in two days. No rash.

4th case—Severe symptoms, one day ill, 20 c.c. serum, also Pulv. Ipecac. co. Third day much better, diarrhoea continued for some days. The irritating rash appeared on twelfth day and lasted for three days.

5th case—Severe symptoms, one day ill, pain and tenesmus severe, 20 c.c. serum, also Dover's powder. Free from pain on third day, but stool not free from blood and mucus till next day. The irritating rash appeared on eighth day and last for three days.

6th case—One day ill, complaint of severe symptoms, frequent stools and tenesmus, 20 c.c. serum. Two days later patient was much better, but there is severe headache, blood, mucus and diarrhoea continue till morning of fifth day. The rash appeared on eighth day and lasted for three days.

Lieutenant Lewis sums up what he considers the advantages of the treatment as follows—

"The advantages of this method of treatment are, I think—

(1) The almost immediate relief from tenesmus, (2) its rapid beneficial action, blood first disappearing from the stools and then mucus, (3) freedom from relapse of the disease, all patients have remained quite well, (4) the absence of nausea, vomiting and depression, etc., caused by the treatment with ipecacuanha in large doses. The disadvantages, if such a word can be used, are none of them serious."

These results, no doubt, are fairly satisfactory, but we are not convinced of the superiority of this method over the sulphate of soda treatment carefully carried out. These cases were got early and treated promptly, with rest in bed and light diet, two very important factors in the treatment of dysentery. We also note that the diarrhoea, blood and mucus were not so rapidly affected by the serum as was the pain and tenesmus, and the dose of Dover's powder given may not have been without influence in quieting these symptoms. Headache too seems to have been a somewhat prominent symptom, and may possibly have been associated with the serum treatment. The appearance of an "intensely irritating" rash is a very grave drawback to the use of this serum. Even though controlled by calcium chloride in large doses, still the fact that the itching is so severe that one of the patients made his hands bleed with scratching, is almost enough to condemn the method. We know of no published experience of the use of this anti-dysenteric serum in India, and shall be glad if our readers shall send us their experience.

We have said that in the above cases we are not convinced of any special merit of this serum treatment, and in similar cases treated as promptly with rest and low diet, we are sure that equally good or even better results are obtainable under the saline method. In a recent article in the *Lancet* (November 10th, 1906, p. 1280), Dr. John Maberly of Cape Colony referred to the series of dysentery cases treated by the present Editor of this *Gazette* (over 1,000 consecutive cases with only one death) by sulphate of soda, and states that in his hands

also it has proved extremely successful, and in many cases "the stools became feculent and of normal consistence in from two or four days." Dr. Maberly gives reasons for considering sulphate of soda an intestinal antiseptic and has also used it successfully in cases of typhoid fever.

Therefore as we have already said we are of opinion that equally good results are to be expected in early cases like these from the proper use of sulphate of soda.*

THE TYPES OF BACILLI OF THE DYSENTERY GROUP

In the *Philippine Journal of Science* (Vol. I, No. 9, November 1906) Dr. Y. K. Ohno details the results of his work at the Tokyo Institute for Infectious Diseases on the etiology of dysentery.

In the introduction of his paper he gives a summary of previous work from the first work of Shiga. It was Strong at Manila, who first strictly distinguished between the two types of dysentery now generally accepted, viz., amoebic and bacillary, though some still feel a doubt as to the existence of a specific amoebic form.

To Kiuse is due the credit for first drawing attention to the variations in the agglutinability of the dysentery bacillus. Spronck, Duval and Basset, Leuz, Park and Carry, and later Hiss have worked at this subject, and Hiss succeeded in giving what many considered to be a reliable classification. He maintained that the bacilli of dysentery fall into four major groups, the first represented by the Shiga-Kiuse bacillus, ferments dextrose readily and at times maltose, the second, represented by Hiss's "Y" bacillus, ferments dextrose and alcohol-mannite, the third represented by Strong's Philippine culture ferments dextrose and mannite with ease and Saccharose with comparative readiness, the fourth, represented by Flexner's Manila culture, ferments dextrose, mannite, maltose, saccharose and dextrose with ease. The agglutination and absorption tests, according to Hiss, show that the agglutinative characters of these different groups are specific.

Dr. Ohno, however, considers that his work shows that "we are compelled to consider the dysentery bacilli of all types (fifteen according to my observations) as constituting a single group of dysentery organisms, in which, however, variations in toxicity, virulence, and even pathological properties between certain strains may exist."

Dr. Ohno obtained strains of dysentery bacilli from Japan, Korea, Manchuria, the Japanese

* See also an admirable article on tropical dysentery by Captain R. J. Blockham, R.A.M.C., *Lancet*, December 1st, 1906, p. 1493. The inefficacy of anti-dysenteric serum is admitted by Dr. D. Este Emery, *Practitioner*, December, 1906.

fleet during the war, the Russian Baltic fleet, and in all 74 strains were collected, unfortunately none of them were obtained from India.

The results of his studies are thus summarised—

1 The great majority of the bacilli which have been isolated from cases of acute dysentery (not due to amoebæ) must be considered as the exciting factor of the disturbance. These organisms (which he has collected) have been divided into fifteen groups, which have fermentative characters distinguishing them from one another, six non-fermenting and nine fermenting mannite (so called non-acid and acid bacilli).

2 The mannite fermenting types are widely scattered over the world and certainly cause characteristic sporadic cases and epidemics of dysentery. The form of the disease by them is often severe, on the other hand the non-fermenting ones often give rise to milder cases of infection as in Manchuria.

3 The grouping of different organisms according to the difference in their powers of causing fermentation does not correspond to that which results from differences observed in agglutinative and bacteriolytic action with specific immune serums. The anti-dysenteric rabbit serums prepared with so-called non-fermenting bacilli often agglutinate strains which ferment mannite in the same, or in higher dilutions than they do other organisms of the non-fermenting type and *vice versa*.

4 In consideration of the above facts, it seems to Dr. Ohno that no reason exists to separate the dysentery bacilli into two distinct groups, the acid and non-acid, as proposed by Leutz, and he can also see no justification in designating any bacillus, which causes dysentery as a pseudo-dysentery bacillus as Kiuse proposed.

"We are compelled to consider these fifteen types of dysentery bacilli as constituting a single group."

THE CESTODE PARASITES OF MAN

We have already on several occasions called attention to the admirable monographs on worm affections of man written by Dr. Charles Waidell Stiles, and published as Bulletins of the Hygienic Laboratory of the Marine Hospital Service of the United States.*

The present paper is a companion to the illustrated key to the trematode parasites of man (Bulletin 17), which we noticed at time of receipt.

The important parasites of this species are—*Tænia saginata*, *T. solium*, *Hymenolepis nana*, *Echinococcus*, and *Dibothriocephalus latus*. In addition to these *T. confusa*, *Diplogonoporus*

grandis, and *sparganum mansonii* are of importance also.

Dr. Stiles divides the cestode infections (tæniases) into intestinal and somatic. The former are the most common form, and includes the infection with adult tapeworms, the somatic variety includes infections of muscles, liver, brain, etc., and the following somatic infections are distinguished—

(a) *Cysticercosis*, or infection with the larvae of *T. solium*, known as *cysticercus cellulosæ*, which occurs chiefly in the connective tissues, the eye and the brain.

(b) *Echinococcosis*, or infection with the hydatid stage of the *Echinococcus* of dogs. It may occur in any organ, but chiefly in liver and lungs.

(c) Infection with *sparganum mansonii*, this is rare, diagnosis by finding the worm, treatment surgical. It has also been called *ligula mansonii*. It is common in China and Japan and a similar parasite is mentioned in Guiana and in Egypt. It is about 3 or 4 inches long and is found in the connective tissue and abdominal cavity.

We cannot here follow Dr. Stiles in the 100 pages of minute description of these cestodes but we commend this and the other bulletins of the same series to all who are interested in helminthology, a subject of great importance in India, owing to the extreme prevalence of intestinal worms in the inhabitants of all parts of India.

A VALUABLE article on relapsing fever and spirochætes by Novy and Knapp appears in the *B. M. J.* for 1st December. The authors believe that the spirochæte in cases of relapsing fever in America differs from that found in relapsing fever in Bombay, as seen in blood smears sent by Captain W. S. Patton, I.M.S.

It appears as if we must recognize a plurality in relapsing fevers.

THE exact relationship of the spirochætes to hæmoptysis is a subject worth investigation in India, especially in cases of hæmoptysis not due to tuberculosis. Castellani, of Ceylon, in the *Lancet* (May 19th, 1906), and Brauch, of St. Vincent, have recently reported the finding of spirochætes in sputum.

DR. LUFF wrote, "Uric acid is a harmless by-product of the human economy, which has been most shamefully exploited as a dangerous poison" (*Practitioner*, Dec, p. 837).

FINLAND, in a short article on the treatment of dysentery, has referred to the value of a drug called hysteronica, the botanical source of which is *Haplopappus baylahuen*. The plant is indigenous to South America, and is used in Chili and

* These admirable and complete monographs are obtainable on application to the "Surgeon General, U. S. Public Health and Marine Service," Washington, U. S. A.

the provinces of the west coast of South America as a specific for dysentery. A fluid extract has been made for him by Parke, Davis & Co., of which the dose is 20 minims, to be taken in milk or almond emulsions three times a day. He gives three cases of chronic sporadic dysentery in which it has been used with good results, but the author has had no personal experience with it.

THE *Practitioner* quotes the following story which is worth reproducing —

"A working man called upon a surgeon for advice and medicine, who, having 'diagnosed' the case, made up a bottle of mixture, and asked half a crown as his fee.

"'Half a crown!' exclaimed the man. 'That is a lot to charge. Why, I suppose there ain't sixpennyworth of stuff in that bottle?' 'Well, no,' answered the doctor, 'I doubt if there is more than twopennyworth of 'stuff' in it. But I will tell you what I will do,' he added, 'the next time you want to consult me you pay me sixpence and you shall take your choice from all my bottles.' 'Oh! but,' said the man, 'I should not know which to take.' 'Exactly,' retorted the surgeon, 'and that is why you pay me half a crown!'"

To comply with the repeated requests of Assistant-Surgeons and Hospital Assistants in India, the Proprietors of this *Gazette* propose to issue it at the reduced rate of six rupees per annum to all *bona fide* Assistant-Surgeons and Hospital Assistants, provided a sufficient number of new subscribers join to cover the cost of the cheaper issue. We feel sure that this will be considered good news by a large number of Assistant-Surgeons and Hospital Assistants who have often written to us urging this concession. The Publishers, Messrs Thacker, Spink & Co should be applied to.

Reviews.

Criminal Investigation—By HANS GROSS. The English Edition by JOHN and J. COLLYER ADAM, Barristers at-Law, H. Krishnamachari, Publisher, Egmore, Madras, 1906.

THIS book on criminal investigation is better described by its sub-title as a practical handbook for Magistrates, police officers and lawyers, and we would add for Civil Surgeons in India.

We confess we have been greatly fascinated by this book, it is a wonderful collection of matter most interesting to medical men and especially to Civil Surgeons in India.

It is extremely interesting to read, and combines the erudition of Chever's *Medical Jurisprudence* with the romance of Griffith's *Mysteries of Police and Crime*.

The basis of the book is the *System der Kriminalistik* by Dr. Hans Gross, the Professor of Criminology in the University of Prague, and it has been translated and adapted to Indian

and Colonial practice by two barristers in Madras, Mr. John Adam and Mr. J. Collyer Adam.

The German edition is a well-known work and has been translated in most of the languages of Europe and into Japanese.

The Indian adapters have, we think, succeeded well in their task and have certainly combined and included in the present edition a mass of information of special interest in India.

The book is very well printed, in clear type on good thin paper and though consisting of over 900 pages, it is by no means clumsy.

It is quite impossible in a short review to attempt to criticise such a volume, it is one which we think should be on the table of every Magistrate and Police Officer, and in the library of every Civil Surgeon and Jail Superintendent in India.

The first part is divided into six chapters, on the investigating officer, his duties and procedure, then comes a chapter on the examination of witness and accused, when the witness desires to speak the truth and when he does not wish to speak the truth. Chapter III is devoted to inspection of localities at the scene of offence, and the search for hidden objects. Chapter IV deals in an humorous way with the equipment of the investigating officer, it tells us that Government official paper is bad, and that our time-honoured "office box" is cumbersome.

Chapter V is of special interest to the medical man, it deals with the "Expert and how to use him," with medical jurisprudence, and the many questions which present themselves to the medical expert for solution, e.g., tattooing, hypnotism, colour-blindness, age, teeth, use of the microscope, stains, dust, clothes, etc., etc., then follows sections dealing with experts in chemistry, in handwriting, firearms, photography, with anthropology, Bertillonism, fingerprints, etc., etc.

Of possibly still greater interest is Part II in which the chapters deal with such interesting subjects as disguises, false names, malingering and shamming, criminal signs and signals, calls, stigmata, etc. An interesting chapter is devoted to criminal slang. Chapter X gives an interesting account of the various wandering tribes of India and the gipsies of Europe. The chapter on superstitions is of much interest, and that on firearms both useful and interesting. Other chapters deal with subjects such as drawing, sketching of houses, etc., the observation of footprints in standing, walking or running, and on the reproduction of footprints for exhibit in court. There is also a useful chapter on traces of blood, how to preserve, and copy such marks. Chapter XV gives a very interesting account of ciphers and other secret writings and suggestions as to the deciphering of secret writings.

Part IV deals with bodily injuries and poisoning, with theft, cheating and fraud, falsification of documents, counterfeiting seals, coins, with

horse brands, horse and cattle marks, cheating at cards and other games with the methods of the sharp, and with brands relating to antiquities and works of art. There is also a useful chapter on caste and caste marks, which is of general interest.

Other chapters discuss arson, serious accidents, and boiler explosions.

There is an excellent index and bibliography.

We have only barely indicated the headings of the various chapters in this fascinating book. We know of no other volume in which so much of interest on these subjects is gathered together.

The book seems to us to be admirably adapted for use as a text-book in all Police training schools, and as a text-book for the examinations which have to be passed by all junior civil and police officers. The Civil Surgeon will also find it not only of value but intensely interesting also.

A System of Medicine.—By T. CLIFFORD ALLBUTT and H. D. ROLLESTON. Vol. II, Part I, 1906. London: Macmillan & Co.

THE first part of the second volume of the second edition of this great work has followed not long after the first volume.

As announced in the preface to the new edition, the second volume will be in two parts, the first, which is at present before us, is a handsome volume in the familiar red and gold binding, consisting of well over a thousand pages and contains the continuation of the Infections and Intoxications, with a very important article by Prof. J. Ritchie on the general Pathology of Infection.

The second part of the second volume will be the one of special interest to our readers. It will contain all the latest work on diseases of the tropics and will collect in revised and up-to-date form all the articles in the whole system dealing with tropical diseases and animal parasites. This is promised soon.

Those who possess the first edition of this great System of Medicine will be interested to learn in what particulars the new volume differs from the old. In the first place Prof. Ritchie's article on the general pathology of infection takes the place of one originally written by the late Prof. Kanthack, and it treats in a full and complete manner of the subjects of the relations of bacteria to disease, of the changes produced by bacteria in the animal body, of the great subject of immunity, and in a very interesting section the relation of bacteriology to therapeutics is discussed, and the latest work of Sir A. E. Wright is summarised. As usual in this System a full bibliography follows each chapter.

Under the heading "Infective diseases of established bacteriology" are treated the subjects of glanders, of farcy, of anthrax, tuberculosis, streptothrix infections, actinomycosis and syphilis. Sims Woodhead is the author of the

article on glanders and farcy, that on anthrax is by J. H. Bell and Dr. T. M. Legge. The latter is of importance at present as the Home Government has raised the question of anthrax infection in hides and wool imported from India. On this point our experience when in charge of the large prison wool factory at Bhagalpur tends to make us sceptical of any great degree of infection in Indian raw wool. Large quantities of wool from all parts of Northern India are used in the wool factory of the Bhagalpur Central Jail for the manufacture of army blankets and prison clothing, yet we have never seen or heard of a case of wool-sorter's disease or other anthrax infection except one very doubtful case in a European foreman, and we do not believe that Indian wool is at all largely infected with the anthrax bacilli.

The subject of Tuberculosis is ably handled by Dr. Sidney Mouton and Dr. Bosanquet. Dr. Ackland deals with actinomycosis, but readers in this country would have welcomed a fuller discussion of the relationship of actinomycosis and streptothrix infections with mycetoma or Madura foot.

A chapter on Syphilis by Jonathan Hutchinson needs no further commendation.

Under the heading "Infective Diseases of Doubtful Nature," ordinary diseases as measles, scarlet fever, small-pox, whooping cough, mumps and rheumatic fever are ably treated at full length. The clinical study on vaccinia in man by Dr. Ackland is a masterpiece, and is ably supported by Dr. Copeman's article on the pathology of vaccinia. The subject of vaccination as a branch of preventive medicine could not be in able hands than those of Dr. J. C. McVail, and the Medical Officers will here find a mass of figures and facts to convince any honest sceptic.

Prof. Sims Woodhead treats of hydrophobia, and a very interesting article by Dr. F. Ford Cargill discusses the co-existence of infectious diseases, *i. e.*, diseases running concurrently in the same individual. The rest of this volume is taken up by chapters on food poisoning, grain poisoning, ergotism, pellagra, the chapter on lathyrism could have been more complete had the author consulted recent volumes of the *Indian Medical Gazette*.

Dr. H. D. Rolleston has a sober sensible article on alcoholism, and Prof. Clifford Allbutt and Dr. W. E. Dixon discuss opium poisoning and similar intoxications. Again we say a reference to our pages would have made more complete the chapter on cocaine, no allusion is made to the very great hold cocaine-eating has of recent years got of the natives of India, and in view of recent edicts from China, it is probable that if the sale of the pure Indian opium is checked, cocaine will take its place, and the well-meaning efforts of certain people will have succeeded in substituting one poison for another.

We have indicated enough of the contents of this volume to show it worthily takes its place in the great *System* to which it belongs, a *System of Medicine*, which so ably represents the medical knowledge of the twentieth century

Liverpool Tropical School—Memoir XXI

THIS valuable memoir is dated September 1906 and represents the results of work done at the Runcorn Research Laboratories of the Liverpool School of Tropical Medicine since September 1905

In these new Laboratories the experimental work on trypanosomiasis, using the material brought back from the Gambia by the late Dr J Everett Dutton

The first paper is an experimental study of the parasite of African tick fever, the *spirochaeta Duttoni*, and is written by Anton Bierul and A Kinghorn

Several cases and charts are given, and an interesting comparison is made between this form of spirochaeta or spirochaetal fever and the well-known European relapsing fever which is due to the *S Obermeieri*. Koch had drawn attention to the small number of parasites in the blood of tick fever cases as contrasted with the numbers present in cases of relapsing fever. Moreover, the attacks and the relapses are of longer duration in the European fever. The four cases here quoted were all due to infection of the experimenters while working in the Laboratory at Runcorn

We cannot find space to follow the full account here given of the animal reactions of *Sp Duttoni*. The experiments show that the writers have been able to infect nearly all the "usual laboratory animals". In some the parasites were only found in the subinoculations. Cats have shown themselves entirely refractory to the infection, and the most susceptible animals are white rats and then monkeys

No satisfactory explanation is yet forthcoming for the peculiar phenomenon that the spirochaetes disappear from the blood, so that they cannot be seen by microscopical examination and then reappear

The writers have gone very fully into the question of immunity and have given the following conclusions—

1 In animals which have recovered from the infection there is a relatively active immunity of comparatively long duration

2 We have been unable to produce passive immunity through use of immune serum.

3 Immune serum has no curative action whatever, hyperimmune serum occasionally cuts short an attack, but does not prevent relapses

4 The spirochaete of African tick fever is a different species from *Sp Obermeieri* since each confers a relative immunity against itself but not against the other

Another valuable paper is on attempts which were made to transmit spirochaetes by the bites

of *Cimex lectularius*. The conclusion arrived at is that *C lectularius* is probably unable to transmit *Sp Duttoni* or *Sp Obermeieri*, and therefore cannot be an important factor in the causation of epidemics of relapsing fever

We commend this memoir to the notice of all interested in the subject of trypanosomiasis

Scientific Memoirs of Officers of the Medical and Sanitary Departments of the Government of India—By CAPT S R CHRISTOPHERS, M.B., F.R.S. No 25, No 26, New Series. Price 12 annas

THIS valuable series of *Scientific Memoirs* has been further enriched by the publication of Capt S R Christophers' Memoir (No 26) on *Leucocytozoon Canis*, a parasite resembling the haemogregarine forms so common in cold-blooded vertebrates. One such parasite found in the white corpuscles of the blood of a dog, the common pariah dog of Madras is here described, which in a previous memoir (No 14) Capt S P James had fully described and Bentley first saw it in the peripheral blood of a dog. The present memoir describes the parasite in the organs and compares it with other mammalian haemogregarines, and its complete sexual development in the tick (*R. sanguineus*, Latreille). We cannot fairly summarise this paper here, we must refer the memoir itself to our readers

In *Memoir No 25*, Capt Christophers deals with the importance of larval characters in the classification of mosquitoes, a subject which he had formerly taken up along with Dr W W Stephens, in one of his Royal Society Malaria Reports (7th series) and in their well-known book, *The Practical Study of Malaria*. It is evident, he says, that in general genera based upon the adult characters are established still more firmly by a consideration of the immature stages, but there are many points brought out very clearly by immature characters which are not so evident on consideration of adult characters alone

Medical Society.

THE BOMBAY MEDICAL AND PHYSICAL SOCIETY

THE September Meeting of this Society was held on 26th September, Dr T B Nauman in the Chair

Major H Herbert showed some patients who had been cured of **glaucoma** by the formation of filtering cicatrices, or a small subcutaneous leakage of aqueous humour through the scar of a small sclerotomy wound, without the formation of any obvious fistula and without the inclusion of iris in the wound. Major Herbert remarked—

"The incision, being a very small one, made the operation exceptionally safe in advanced glaucoma. It was

necessary to steer between an open fistula on the one hand and imperfect filtration on the other hand, and it was thought that the desired condition had been attained in these cases. The operation, therefore, appeared to supply a safe and certain cure for glaucoma in probably any stage, and was a great advance on the usual treatment. The filtering seal was obtained by very simple means. The wound was made with the narrowest possible knife—less than a millimetre in breadth, and the anterior lip of the wound was made as jagged and uneven as possible by a sawing action of the knife. This sufficed to prevent firm union, and gave the desired result."

Dr Row, whose bacteriological work we have often chronicled, read an interesting technical paper on *bacillus pestis* in symbiosis with *staphylococcus pyogenes*. It is well known that the *b. pestis* is not often found in pus from a bubo of a case recovering from plague. In fact this absence of *bacillus pestis* is so common that it may be stated in general terms that "the plague germ vanishes as the bubo suppurates" to quote the words of the Plague Commission for 1898-99, p 96.

"It seems, however, says Dr Row, that the absence of B P is only apparent and not real, and the general failure to detect the B P in bubonic pus cultures is due to the fact that we get such an abundance of *staphylococci* in one or two days again growths that a slide smear shows no evidence of B P. Nor is it possible to isolate the B P by infecting guinea pigs by the cutaneous method of infection described by Kolle, for, as will be pointed out later on, it seems to me that even were the plague bacilli present, they are in a state of attenuation—thus being either *per se* or at all events when in association with *staphylococci*."

In the discussion which followed, Dr Turner asked if Dr Row would suggest adopting the procedure described as a routine method of treatment. Dr Row replied that the cases so treated under his observation had been too few to arrive at definite conclusions sufficient to justify such a recommendation. He might, however, state the results were hopeful as he has obtained 18 recoveries out of 28 cases. Major Meyer suggested subcutaneous injections of *staphylococci* around the bubo in place of superficial scarification. In reply Dr Row remarked that the latter method appeared simpler and afforded a sufficiently intense reaction. Dr Powell referred to the large number of cases which have recently been treated with various subcutaneous injections such as spartine and adrenalin. In such cases he had noticed that extensive sloughing wounds around the buboes commonly resulted. They were undoubtedly due to *staphylococci* and appeared to be beneficial. This might account for the popularity of the practice of applying various native medicines which produce blistering.

The next paper was one by Dr Turner, the Health Officer, on the results of disinfecting plague-infected room with crude petroleum, called by the rather fanciful name *Pesterine*.

Dr Turner (speaking in September last) gave some account of the plague research at the Parel Laboratory, and the following extract gives an

account of his search for a disinfectant which will kill fleas*—

"We have then to deal with the rat as an animal contracting the disease and the flea as the parasite conveying it and the germ itself desposited on the rat by the flea and in the room, clothing, floors and body. Working on this data I searched for a favourable method which would act as a parasiticide and destroy fleas. Some few weeks ago Mr Fraser, of the *Times of India*, sent me a cutting from the *Le Matin* which had been forwarded to him by Mr R D Tata, in which there is a description of the result of a reward offering 10,000 francs for the best method of killing flies, as it is well-known that flies convey cholera, typhoid and other infectious diseases. The material used which gained the prize was L'Huile De Schiste. This appeared to me as a possible means of destroying fleas, and I went into the matter with the result that I obtained a small quantity of petroleum, the residue distillate of a earth oil, which is practically the same as L'Huile De Schiste and made experiments in the Laboratory and in infected rooms in the City and at Parel. I had watched the experiments of treating roads in Bombay with this mixture and saw what a beneficial result it had on soil, giving it a coating like asphalt and rendering the masonry floor of a room hard and smooth, and its thick and adhesive properties would act as a disinfectant and parasiticide. Its penetrating effects on using it in the receptacle for human excreta has been found not only to kill the flies and eggs and pupae, but to penetrate the excreta and prevent fermentation. I, therefore, asked Major Lamb of the Plague Research Commission to assist me in treating a number of rooms and testing its efficacy on fleas and rats. I have called this fluid "Pesterine" for facility of description. It is cheap and easily used. The experiments on the micro organism in the Laboratory do not prove that it has the same bactericidal effect on culture in the test tubes as Izal or Perchloride of Mercury, but, on the other hand, the work done during the past year shows that we have to attack the vehicle or host rather than the germ itself, and the result of experiments lead me to consider that it is the best known method we have for preventing the spread of plague by the rat and flea."

"Pesterine," a crude petroleum, can be obtained at two annas a gallon, and four gallons will render a room (10' x 10' x 10') flea free. We may also quote the following note on use of petroleum disinfection circulated by Dr Turner.

Petroleum Disinfection

For facility of description "Pesterine" is the name given to the residue of the distillation of crude petroleum.

It may be used for disinfection in houses where plague infected rats have been found, or cases of plague have occurred.

It has been experimentally proved that fleas are the chief agents for conveying the infection of plague from one rat to another, and also from rats to human beings.

Disinfection for plague should therefore aim at the destruction of fleas.

"Pesterine" has been found to be very efficacious in killing fleas.

Disinfection with "Pesterine" should be carried out thus, the articles required are—

- "Pesterine"
- Wooden or zinc buckets
- Brushes
- Brushes on long handles
- Brooms
- A watering can

* See also Dr Hossack's paper in January, *I M G*, page 8—Ed

The men who do the disinfection should wear long coats and protect their feet with shoes or "chumpals."

Begin by sprinkling a little "Pesterine" on the floor of the room to be disinfected.

Then remove all the furniture, etc., out of the room. Any fleas dislodged during this process will be caught in the "Pesterine" already sprinkled on the floor.

All clothing should be collected in sacks and sent to a sterilizer for disinfection with steam.

After the room has been emptied, begin by spreading "Pesterine" with a long brush, first over the ceiling and then over the upper parts of the walls.

Then apply it all over the walls, carefully going over all the nooks and cracks and ledges. Walls can be quickly done if the brushes are used in a horizontal manner.

Then sprinkle a little more "Pesterine" on the floor and with a broom spread it all over in an even manner. Generally it will be found that the quantity sprinkled at first, together with that splashed while doing the ceiling and the walls, will be quite sufficient for the floor.

Finally, pour a little quantity into every rat hole seen on the floor.

Disinfection is now complete and the "Pesterine" should be allowed to stand for twenty-four hours, the room is then fit for re-occupation.

"Pesterine" may also be used for disinfecting latrines and night soil receptacles and accumulation of filth, and to kill flies, mosquitoes, and other insects and their eggs and larvae, and to prevent fermentation. Two pints or more of the oil to a superficial yard should be used, mixing it up with the contents of the receptacle.

Flies deposit their eggs in human and animal excreta and decomposing natural matter. Flies may convey germs of cholera, typhoid, and tuberculosis and other infectious diseases.

"Pesterine" is useful in horse and cattle stables and ground contaminated with urine, feces, and collection of water should be treated by pouring the oil on the surface and allowing it to remain.

Crude petroleum oils answer the same purposes, but are more expensive.

In reply to various questions Dr Turner mentioned that Pesterine is not readily inflammable. Its use does no damage except to oil painted walls. It is usually applied by means of brushes. Four gallons is sufficient for a room 10' x 10' x 10' and the cost is 2 annas per gallon. He had also found that it arrested putrefaction and might usefully be added to faeces.

Dr Arthur Powell exhibited two species of filaria, one from the aorta of a buffalo was found in Assam and has been described by Ford of Selangor, the other from the aorta of a Bombay cow has not been before described, it appears to be common in Bombay. The following remarks of Dr Powell, who, as Police Surgeon, has great experience, are of special interest—

"I have made this preliminary note on a matter concerning comparative pathology with the object of asking all those who have opportunities for examining the human aorta to keep their eyes open and search for an analogous parasite in man."

In my experience in Europe I found the largest proportion of sudden deaths in the streets, requiring inquests, were due to valvular disease of the heart, kidney disease and apoplexy.

In Bombay by far the largest proportion of sudden deaths arising from natural causes, and not due to accident or poison, on which we hold inquests are due to aneurism of the aorta.

Aneurism of the other arteries is, I should think, less common than in Europe.

Valvular disease and acute rheumatism are rare as compared with Europe.

Is it not possible, then, that we have some hitherto undiscovered agent in Bombay causing disease of the aorta?

If so, it is strange it should have so long escaped the observation of physicians, though not more strange than the fact that these apparently very common parasites are hitherto unknown to veterinarians."

Several members remarked that the term "aneurism" was hardly applicable. There is no external bulging of the vessel walls. On the contrary there is an internal protrusion which, Dr Powell pointed out, is covered with normal endothelium. He had never succeeded in finding any emboli in the blood.

Capt E F Gordon Tucker, I.M.S., read a paper on the surgical treatment of chronic dysentery which we publish above *in extenso*.

ANNUAL REPORTS

MADRAS HOSPITALS REPORT

THIS report for the year 1905 though written in April did not reach us for many months afterwards. It is satisfactory to see the increase in the number of in-patients in the hospitals of this Presidency. In the Police Hospitals a system of dieting in-patients was introduced instead of the "former objectionable self dieting arrangement." The following extract is interesting—

Causes of variations—Some interesting features appear on a study of the fluctuations in the registered attendance of patients in the different districts of the Presidency. It might be expected in times of epidemic disease, that a larger attendance would be shown but this is not so with regard to three well known 'epidemics,' namely, plague, cholera and small pox, but the cause of the diminished attendance of patients during outbreaks of these three diseases is different in each. In 'plague,' people are afraid of the restrictions accruing from the due observance of the plague regulations and hence keep as clear as possible of the medical officers. In 'small pox,' they consider the visitation of the goddess had better not be interfered with and the disease is therefore allowed to run its own course without undue human interference, in cholera, the people are ready enough as a rule to seek aid, but it unavoidably happens to a certain extent that in some districts where cholera spreads epidemically, that some dispensaries have to be closed to permit of the Hospital Assistants peregrinating in the infected area and hence the registers show a marked decrease in attendance. A striking example in the past year of the effects of epidemic on hospital out-patient attendance is furnished by Bellary where a decrease of 16,931 is shown. 4,737 attacks of plague with 3,901 deaths are reported, 120 attacks with 111 deaths from small pox, while cholera remained throughout the district from May to September. Despite the shrinkage of attendance in out-patients thus caused, the number of in-patients increased by 216, and it is claimed, therefore, that there is evidence of increased popularity in the institutions from the sustained willingness of the people to come into the hospitals for treatment.

Twenty districts report a decrease in the amount of malaria, to be attributed to (1) decreased rainfall, (2) greater care in diagnosis of "fever cases" and (3) perhaps to anti malarial sanitary measures in some instances.

There was a marked increase of operative work during the year, we quote as follows—

Operations—Returns have been received showing a marked increase in the amount of operative work performed during the year. The increase is general throughout the Presidency and when so marked as it is in the following four districts, where the increase ranges between 1,171 and 2,061 more cases than in the previous year, it deserves special notice, namely, Coimbatore 2,061, Tanjore 1,805, Salem 1,590 and Trichinopoly 1,171. The total has risen from 171,083 to 187,436 and the results are claimed to be very satisfactory with a death rate of only 0.25 per cent. This last is slightly lower than the actual figure as cases not doing well are sometimes removed and may figure under the head 'relieved' or 'no better,' but in any case it is certain that a very large amount of operative work has been successfully carried out in the medical institutions of the Presidency, throughout the year. As I noted in my report (triennial) of last year much effort has been spent in recent years in bringing up the operation rooms to a modern standard, and it is satisfactory to report

that increasing use is being made of the improved conditions now present in many stations, and I trust that this expansion of successful surgical work will continue to bring relief to more and more patients in what is in some respects, the most satisfactory sphere of work in modern medical knowledge.

The relative importance of the operations in the large number reported, varies greatly, from the opening of an abscess to the most serious surgical undertaking of modern days but a perusal of statement G will show what a large amount of surgical work has been carried out, and to the professional reader will afford evidence of the operators keeping abreast of surgical progress in operative work.

The following is the list of the many improvements effected in Madras Hospitals during the year —

At the General Hospital several minor improvements were effected at the Maternity hospital extensive repairs and improvements were carried out in the delivery wards, Superintendent's and Matron's quarters and in the smaller buildings, wire netting was put up in the corridors and over the ward windows, at the Ophthalmic, a new block consisting of an operation room, refraction room, dark room, waiting room and a room for students was constructed at a cost of Rs 18,646, at the Native Infirmary, North Georgetown, new Cuddapah slate flooring to the wards and new tile roofing was put up. The roof was renewed and a skylight added to the operating room, the labour ward of the Rajah Sir Rama swamy Moodelnar's Maternity hospital had new flooring, at the Lepet Asylum a ward for native males costing Rs 5,780 was added and the wards were replastered and drains improved. Two new sheds were built at the Krishnampet isolation hospital, one for males and the other for females.

In the mofussil districts, the most noteworthy additions were as follows — A standard plan dispensary was built at Tirugudi, South Arcot, at Adoni a Victoria Memorial Hospital was partially finished at Udipi a caste ward was built, two dressing rooms were added to the Chingleput Hospital a new ward was built at Erode, at Bezvada the Amphill hospital was completed and also that at Bhimavaram, at Nellore new wards were added to the hospital, and a similar addition was made to Alluru, Kavalu, Kundukui, Udayagiri and Atmakur hospitals and a dispensary was built at Butchreddipohem additions were also made to the Kumbakonam, Negripattam and Mannargudi hospitals in the Tanjore district, a lying in ward was added to the Women and Children's hospitals at Vinnai pet, and Hospital Assistant's quarters were built at Tuticorin, a dispensary was built at Kulittalai, in Vizianagaram an excellent Caste and Gosha Female Hospital was declared open by Lord Amphill towards the end of the year.

Three pages is the stern limit allowed to this report, if fuller it would be more interesting. It is impossible to do justice to medical work in the Presidency in three pages.

Correspondence

APPENDICITIS IN INDIANS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In the September number of the *Indian Medical Gazette* and also in the December number 1906, Major Gabbett and Major Barry respectively ask for the experience of Medical Officers on the question of Appendicitis amongst Natives during the last six months.

I have operated on one such case quite recently. The patient was a jemadar sweeper, belonging to the 74th Punjab Regiment, aged 49.

The case was interesting in that the patient was suffering at the same time from chronic Tubercle of the lung.

The abdomen was opened in the usual way over the appendix region, and after considerable trouble the appendix was isolated from a mass of adhesions and pus of a very offensive character. The general peritoneal cavity had been shut off, but this was opened in the attempt to isolate the appendix. The appendix was sloughing with a ragged hole at its peripheral end. It was removed and the abdominal wound partially closed. A gauze drian being left in. This was removed after 24 hours. The patient recovered but suffered for some days from pneumonia. This is the second case operated on in this regiment during the last year and a half. The first case was operated on by Captain Houghton, I M S, and made a complete recovery.

Yours, etc,
C BRIERLEY

Capt, I M S

SAUGOR, C P

MANUAL OF ASEPTIC SURGERY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Major Newman, I M S, has taken exception to certain remarks made in the review on his "*Manual of Aseptic Surgery*," and I shall be obliged if you will permit me to reply.

Firstly, "modified antiseptic method" should have been "modified aseptic method," this is, I believe, a printer's error for the context reads "using antiseptic lotions for instruments, towels and hands during the operation, and antiseptic powders and dressings afterwards." This could only apply to a modified aseptic and not antiseptic method.

Secondly, Major Newman is in error over the "obvious" inference which he has drawn. My remarks were "exception must be taken to the statement that the dresser should rinse his hands in the bowl of lotion provided before proceeding to the next case" and I gather both from his book and his letter that he considers this is sufficient, or what becomes of his pertinent question?

As regards the question as to whether I perform the whole process of sterilisation between dressing one case and proceeding to the next, it would have been pertinent if he had asked when I did not do so.

Lastly, on page 103, speaking of iodoform, Major Newman writes "Its routine use as a dusting powder in aseptic wounds is pointless if not actually harmful," and yet he advises its use in chronic and psors abscesses treated by incision, scraping and suture, thus I think may fairly be called inconsistency.

I am, Sir,
Yours faithfully,
REVIEWER

Service Notes

The following correspondence is of great interest to all Indian Medical Service officers contemplating study leave —

No 970 dated Calcutta, the 19th November 1906

From—J C Feigussan, Esq, Under Secy to the Govt of India, Home Dept,

To—The Secretary to the Government of Bengal, Municipal (Medl), Department

In continuation of the Home Department letter No 1045, dated the 20th September 1905, I am directed to forward a copy of the papers* regarding the method of reckoning periods of study leave granted to officers of the Indian Medical Service.

No 197, dated Simla, the 7th June 1906

From—The Government of India, Finance Department,
To—His Majesty's Secretary of State for India

With reference to the despatches we have the honour to forward for your information a copy of correspondence with the Government of Madras on the question whether two periods of study leave granted to an officer of the Indian Medical Service during the same period of furlough fall under the limitation prescribed in rule 3 of the revised regulations for the grant of such leave.

2 From our Home Secretary's letter, dated the 29th May 1906, you will see that we have decided that if an officer finds that the study leave originally granted to him does not suffice for the purpose in view and applies for further leave to supplement the first, the two periods shall reckon as one grant of study leave, but that if he subsequently asks for additional leave in order to pursue a new object of study, the second period shall count as a separate grant of study leave.

3 We think that this principle is reasonable and that it should be observed for future guidance.

No 15 Public, dated Fort St George, the 5th January 1906

From—Hon'ble Mr Murray Hammick, C I E, I O S Acting Chief Secy to the Govt of Fort Saint George,
To—The Secretary to the Government of India, Home Department

I am directed to address you regarding a case which has arisen under the rules for the grant of study leave to officers of the Indian Medical Service.

2 Captain E M Illington I M S, was granted privilege leave for three months from the 9th July 1903 combined with furlough to Europe without medical certificate for one year and nine months. Intimation was received from the India

* Despatch to the Secretary of State, No 197, dated the 7th June 1906 and enclosures.

† Despatch from the Secretary of State, No 101 Milly, dated the 31st August 1906.

Office in July last that Captain Illington had been granted study leave from the 16th January 1905 to the 30th March 1905, for 74 days. A list of officers of the Indian Medical Service who had been granted study leave and whose periods of study leave expired on or before the 30th June 1905, was subsequently received with Home Department letter No 995, dated the 4th September 1905. It shows that Captain Illington was on study leave for two periods, namely, from the 1st November 1903 to the 26th April 1904, and from the 16th January 1905 to the 30th March 1905. The rules then in force on the subject of study leave were the rules forwarded to this Government with Military Department memorandum No 6807D, dated 16th December 1904. They did not limit the number of times an officer could obtain study leave in the course of his service, but rule 2 provided that the maximum period of study leave should not exceed "a total of 12 months in all."

3 Rule 3 of the revised regulations forwarded with Home Department letters No 707, dated 21st June 1905, and No 1043, dated the 20th September 1905, provides that 'study leave may be taken at any time, but will not be granted more than twice in an officer's service.' Captain Illington now inquires whether the two periods of study leave granted to him constitute study leave taken twice in the course of his service, and whether he is debarred from again obtaining such leave. During the two periods, he underwent separate courses of study. The first included Surgery, Operative Surgery, Anatomy and Gynecology and the second was spent at the Liverpool School of Tropical Medicine and included Tropical Medicine, Sanitation and Parasitology. He points out at the same time that the limitation of study leave to twice in an officer's service was not included in the rules with which he was supplied while on furlough.

4 I am directed to request that the Government of India will be good enough to furnish this Government with an authoritative ruling whether two periods of study leave granted during the same period of furlough fall under the limitation in Rule 3 of the revised regulations and if so, whether the rule applies to study leave granted before the end of June 1905. Three other officers of the Madras Civil Medical Department were granted separate periods of study leave in a similar manner, viz, Captains J W Cornwall, T H Foulkes and H Kirkpatrick, I M S.

No 464, dated Simla, the 29th May 1906

From—H H Risley, Esq., C S I, C I E, Secretary to the Government of India, Home Department,

To—The Chief Secretary to the Government of Madras

I am directed to acknowledge the receipt of your letter No 15 Public, dated the 5th January 1906, in which you ask for an authoritative ruling on the question whether two periods of study leave granted to an officer of the Indian Medical Service during the same period of furlough fall under the limitation prescribed in rule 3 of the revised regulations for the grant of such leave.

2 In reply, I am to say that when the rule in question was framed, it was intended that an officer should be allowed study leave on two occasions only during his service, not that the study leave taken on any one occasion should not, if necessary or convenient be broken or interrupted by intervals of the ordinary leave with which it is combined. I am to explain that if an officer finds that the study leave originally granted to him does not suffice for the purpose in view and applies for further leave to supplement the first, the two periods should reckon as one grant of study leave. If he subsequently asks for additional leave in order to pursue a new object of study the second period should count as a separate grant of study leave. The intention is that if the officer desires to take his study leave in broken periods or finds the period originally granted insufficient and wishes to supplement it and yet to have it covered by one grant, he must announce the whole course of study which he proposes to pursue when he first applies for study leave.

3 I am to add that the present ruling, so far as it affects officers adversely, will only take effect in future cases.

No 104 Military, dated India Office, London, the 31st August 1906,

From—The Right Hon'ble John Morley, O M, His Majesty's Secretary of State for India,

To—His Excellency the Right Hon'ble the Governor General of India in Council

I have considered in Council the proposal of your Financial Despatch, No 197, dated 7th June 1906, that if an officer after a first grant of study leave is granted additional leave in order to pursue a new object of study the second period shall count as a new grant of study leave.

2 Officers when they first come to this country on leave do not know where the courses they propose to take can best be pursued and in consequence it is difficult for them to submit a complete scheme of study. It has, however, been the practice to allow them in certain cases to study for two objects

concurrently, and it would be hard to make a distinction between two officers who obtained the same certificates, one having in the first instance submitted a scheme of study involving simultaneous study for two objects, while the other after the termination of the first course applied for an extension of his study leave for the attainment of the other object of study.

3 The proposed rule would also, it seems to me, bear hardly on senior officers. A junior officer studying for a general qualification covers a wide range of subjects and can in general expend all the study leave due to him. But a senior officer, to whom a degree is of less value, may prefer to concentrate on a restricted portion of a subject. Courses suitable for such a case are in general not of long duration though they may occupy the officer's whole time while they last. Under the proposed interpretation of rule 3 two of these short courses would exhaust an officer's study leave, though in combination they might not nearly amount to the twelve months laid down as a reasonable allowance when study leave was sanctioned.

4 It is possible, too, that in cases where the officer was not studying for a degree it might be difficult in practice to decide whether the second course of study was so closely related to the first as rightly to be considered a continuation or a supplement.

5 For these reasons I think it better to adopt the rule that all study leave granted during one period of absence from India shall be considered as a single grant. This will be an advantage to the officers for it will enable them to make full use of the study leave arrangements. On the other hand, it does not involve any further expenditure than was contemplated in the original proposals, there being no question of extending the total amount of study leave which may be taken during an officer's service, and as far as I can see it means no increase of administrative difficulties.

In modification of previous orders the Secretary of State has signified his approval to officers of the Indian Medical Service in military employ, of the rank of field officer, being selected to proceed to Japan to study the language.

CAPTAIN H BOULTON, I M S, took over the civil medical duties of Brann District on 12th November relieving Captain J Husband, I M S.

THE following reversion and posting are ordered in the Medical Department—Captain E R Rost, I M S, to revert to his substantive appointment as Resident Medical Officer, Rangoon General Hospital.

On relief by Captain Rost, Captain F A L Hammond, I M S, to the civil medical charge of the Thayetmyo District, in place of Lieutenant Colonel Bensley whose services have been replaced at the disposal of the Government of India.

On return from furlough Lieutenant Colonel J Morwood, I M S, was posted as Civil Surgeon to Sultanpur, U P.

CAPTAIN A E J LISTER, M B, F R C S, I M S, has been permitted to return to duty in the Northern Command from leave.

THE revised rules for examination in the Brahui language for Military and Civil officers in Sind and Baluchistan are published in Indian Army Orders, dated 12th November 1906.

THE following appears in Indian Army Orders, 12th November 1906—

The Commander in Chief in India is pleased to appoint the undermentioned officers of the Indian Medical Service, as Specialists in the subjects noted below—

Psychological Medicine

Captain W S J Shaw, M B, Western Command

Midwifery and Gynecology

Lieutenant W Gillet, Northern Command

LIEUTENANT COLONEL O H CHANNER, M B, C M (Ed), D P H, I M S, has been allowed by His Majesty's Secretary of State for India to return to duty within the period of his leave.

LIEUTENANT COLONEL A V ANDERSON, M B, I M S, has been allowed by His Majesty's Secretary of State for India an extension of furlough on medical certificate for six months.

MAJOR W D SUTHERLAND, I M S, Civil Surgeon, who was granted combined leave in Order No 4814, dated the 20th April 1906, was granted, by His Majesty's Secretary of State for India, study leave from the 6th August to the 10th October 1906, both dates inclusive.

CAPTAIN W D RITCHIE, I M S, Civil Surgeon, Jalprugui, was granted three months' privilege leave from 1st January

ON the return of Lieutenant Colonel F Clarkson I M S, from furlough, Captain W W Clemesha, the Officiating Sanitary Commissioner, Bengal, has gone on furlough

ON return from deputation with His Highness the Kanwar Sahib of Patiala, Major C H James I M S, resumed charge of his duties as Medical Adviser to the Patiala State on the forenoon of the 12th of November 1906, relieving Captain H Ainsworth, I M S

CAPTAIN D MUNRO I M S, is appointed with effect from the 19th November 1906 to act as Deputy Sanitary Commissioner, Bengal and Orissa Circle, during the absence, on leave, of Captain W W Clemesha, I M S, or until further orders

LIEUTENANT COLONEL W A LIL, I M S, is due to return to Madras from furlough on 20th March 1907

LIEUTENANT COLONEL W B BROWNING, C I I Principal Medical College Madras, got an extension of leave up to 23rd December 1906

CAPTAIN C L WILLIAMS, I M S, is due to return from leave on 19th March 1907

MAJOR C DONOVAN, I M S, is due to return from leave on 7th June 1907

CAPTAIN W J NIBLOCK, I M S, has applied for two months' extension of furlough and is not due to return till end of October 1907

CAPTAIN F D S FAYRER, I M S, is due back from furlough on 22nd June 1907

THE services of Captain F H Watling M B, I M S (Bengal), are replaced temporarily at the disposal of the Chief Commissioner, Central Provinces. Captain Watling was employed under the Government of Bengal from the 10th October 1907 to the 31st October 1906, as Civil Surgeon of Sambalpur

THE services of Colonel P H Benson M B, I M S (Madras), are replaced at the disposal of His Excellency the Commander in Chief in India, with effect from the 4th November 1906, on the return of Surgeon General Browne, C I E

LIEUTENANT COLONEL F WILLIAMS THOMPSON M B, I M S (Bengal), is placed on special duty at the Central Research Institute, Kasauli, under the orders of the Sanitary Commissioner with the Government of India

MAJOR T W A FULLERTON, I M S, has been granted an extension of leave up to July 1st, 1907

MAJOR A L DUKI, I M S, acted as Political Agent, Bikaner, till relieved by Lieutenant Colonel Stewart, I A

CAPTAIN DE VIRE CONDON, I M S, has passed the Lower Standard Examination in Poisan

THE KING has approved of the retirement of Lieutenant Colonel W A Mawson, I M S, Lieutenant Colonel H W B Boyd (since deceased) and Lieutenant Colonel R Cobb, I M S

WE quote, with appreciation, the following remarks from the B M J of 24th November —

"Our correspondent forwards with his letter the first report of this hospital (1903-1904) in which the reasons for its establishment in 1902 are stated. These were (1) to provide for Parsees of the middle class, too poor to employ a doctor privately and too proud to resort to a public hospital, accommodation and treatment during illness on moderate terms, and (2) to break the Indian Medical Service 'monopoly' and provide 'superior practical experience' for medical graduates. This Indian Medical Service 'monopoly' which is also disparagingly mentioned by our correspondent, consists in the faithful and efficient performance by members of the Indian Medical Service of the duties for which they have been engaged. It is to this that the indigenous medical profession in India owes its existence and success. It is time that this senseless detraction of the Indian Medical Service, which we are glad to find is not overtly resented, should cease. A spirit of harmony and co-operation should govern a profession which is, above all others, altruistic."

The word 'indigenous' is hardly the best to use, we could apply it to the so called Ayurvedic and such systems. What our London contemporary meant is the medical profession, consisting of Indians, trained in Government Schools, Colleges, and taught by Officers of the Indian Medical Service and professing the practice of medicine as taught in Western schools

ON relinquishing charge of the duties of Civil Surgeon of Dalhousie Major E S Peck, I M S, resumed charge of his duties as Civil Surgeon of Gurdaspur on the forenoon of the 10th of November 1906, relieving Assistant Surgeon Kishan Chand

ON return from the privilege leave of absence granted to him in notification No 981, dated the 10th of November 1906, Dr D N P Datta, Civil Surgeon, resumed charge of his duties at Hoshiarpur on the forenoon of the 16th of November 1906, relieving Assistant Surgeon E Phillips

INDIAN MEDICAL SERVICE—SPECIALISTS—The undermentioned officer is appointed a Specialist in the subject noted with effect from the date of publication of this order —

Prevention of Disease

Major G W Jenney, M B Mhow

DIVISIONAL STAFF—Colonel P H Benson, M B, Indian Medical Service, Principal Medical Officer, Bangalore and Southern Brigades, is transferred in the same capacity to the 6th (Poona) Division

BRIGADE STAFF—Colonel O Todd, M B, Royal Army Medical Corps, Principal Medical Officer, 6th (Poona) Division, is transferred in the same capacity to the Bangalore and Southern Brigades

LIEUTENANT COLONEL F J DRURY, I M S, officiating as a Civil Surgeon of the first class, is confirmed in that class, with effect from the 10th October 1906, vice Lieutenant-Colonel R Cobb, I M S, retired

LIEUTENANT COLONEL T GRAINGER, I M S, Civil Surgeon of Hazaribagh, at present officiating at Muzaffarpur, is appointed, with effect from the 10th October 1906, to act as a Civil Surgeon of the first class during the absence, on leave, of Lieutenant Colonel J B Gibbons, I M S, or until further orders

MAJOR H S WOOD, I M S, Civil Surgeon, on return from leave, is posted to Mymensingh, with effect from the date on which he may take over charge from Captain W V Coppinger, I M S

THE services of Captain W V Coppinger, I M S, are placed at the disposal of the Government of India in the Home Department, with effect from the date on which he may be relieved of his officiating appointment as Civil Surgeon, Mymensingh. He has returned to Bengal and is posted as Civil Surgeon of Purnia

THE late Brigade Surgeon Lieutenant Colonel A Crombie, I M S, M D, left assets in India to the value of over 2 lakhs and thirty five thousand

THE services of Lieutenant Colonel O N Bensley, I M S, recently employed in Burma, are placed at the disposal of the Commander in Chief

MAJOR J PENNY, I M S, received medical charge of the Government Plague Hospital, Rangoon, on 13th November 1906

CAPTAIN J R J TYRRILL, I M S, is appointed an Agency Surgeon, 2nd class, and posted as Civil Surgeon of Wana

MAJOR V G DRAKE BROCKMAN, I M S, Agency Surgeon, has been granted furlough for one year, from 29th October 1906 under Act 3116, C S R

LIEUTENANT COLONEL H N V HARRINGTON, I M S, Agency Surgeon, 1st class, is posted as Residency Surgeon, Western States of Rajputana

CAPTAIN L J M DEAS, I M S, on return from furlough, is posted to Alwar as Agency Surgeon

MAJOR W E SCOTT MONCREIFF, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, is posted as Residency Surgeon in Mewar

SERVICE NOTES

FEB, 1907]

MAJOR J FISHER, D.S.O., Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, is posted as Agency Surgeon in the Eastern States of Rajputana

LIEUTENANT COLONEL W H B ROBINSON, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, is posted as Agency Surgeon in Bikrui

LIEUTENANT COLONEL P D PANK, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, is posted, on return from furlough, as Residency Surgeon in Jaipur

MAJOR P J LUMSDEN, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class is posted on return from furlough, as Residency Surgeon in Gwalior

MAJOR T W IRVINE, Indian Medical Service (Bombay), an Agency Surgeon of the 2nd class is posted, on return from furlough, as Residency Surgeon in Mysore

LIEUTENANT COLONEL MACLAREN, I.M.S., Civil Surgeon of Allahabad, Dr Turner, and Health Officer of Bombay will be associated with Sir Hamilton Smith, in the inquiries to be made into the working of the Factory Act in India

CAPTAIN J W F RAIT, I.M.S., Civil Surgeon (Bengal), who is at home on furlough, has taken the degree of B.S. (Lond.)

CAPTAIN A LEVENTON, I.M.S., and Captain A W Tuke, I.M.S., have both passed the necessary examination and have been admitted Fellows of the Royal College of Surgeons, Ireland

THE rules for the admission of medical men to the Army Medical Reserve are published in Army Orders, dated 1st November 1906 (see B.M.J. of 1st December)

CAPTAIN R L HAGGER, I.M.S., has been appointed to act as Civil Surgeon, Jacobabad, from the forenoon of the 16th November 1906, in addition to his own duties

CAPTAIN F H WATLING, I.M.S., whose services have been replaced temporarily at the disposal of this Administration by Government of India, Home Department Notification No 1025, dated the 4th December 1906, is appointed to officiate as Civil Surgeon, Bilaspur

TRANSPORT REGULATIONS.—The Government of India have decided* that in future officers travelling on inspection duty may be permitted to include in their travelling allowance bills, the actual fare paid for the conveyance of their bicycles, in lieu of obtaining warrants for the same

MAJOR J CHAYTOR WHITE, I.M.S., on return from leave, resumed charge of the office of Deputy Sanitary Commissioner, 1st Circle, U.P.

MAJOR A E ROBERTS, M.B., I.M.S. (Bengal), Secretary to the Director General, Indian Medical Service, is granted privilege leave for 3 months with furlough out of India for 1 year and 14 days in continuation, with effect from the 6th January 1907, or the subsequent date on which he avails himself of the leave

MAJOR B G SETON, I.M.S. (Bengal), is appointed to officiate as Secretary to the Director General, Indian Medical Service during the absence on leave of Major A E Roberts, I.M.S. (Bengal), or until further orders

THE services of Lieutenant Colonel J F MacLaren, M.B., I.M.S. (Bengal), are placed temporarily at the disposal of the Department of Commerce and Industry, with effect from the date on which he relinquished charge of his duties as Civil Surgeon of Allahabad

CAPTAIN W R BATTYE, Indian Medical Service, Officiating Agency Surgeon, Meshed, held charge of the current duties of the office of His Britannic Majesty's Consul General and Agent to the Government of India in Khorassan, in addition to his own duties from the 27th November to the 9th December 1906, both days inclusive

CAPTAIN F POWER CONNOR, I.M.S., a Civil Surgeon, Bengal, has gone to attend an X Ray course in the Institute at Dehra Dun

THE following notices appeared in the Calcutta Gazette of 19th December —

Captain F A F Brinardo, I.M.S. Officiating Civil Surgeon, stationed at Shahabad, is appointed with effect from the afternoon of the 9th November 1906, to act as Civil Surgeon of Bhagalpur, during the absence, on deputation, of Major C R Stevens, I.M.S., or until further orders

Captain A F Stevens, I.M.S., Officiating Civil Surgeon, is transferred from Hooghly to Shahabad, with effect from the forenoon of the 17th November 1906

Captain M Mackelvie, I.M.S., was on general duty at the Medical College Hospital, Calcutta, from the forenoon of the 20th to the afternoon of the 30th October 1906

Captain M Mackelvie, I.M.S., is appointed temporarily to act as Civil Surgeon, and is posted to Sambalpur, with effect from the forenoon of the 1st November 1906

Captain J G Fleming, I.M.S.D., Civil Surgeon, Manbhum, is transferred to Birbhum

Captain F P Connor, I.M.S., was on general duty at the Medical College Hospital, Calcutta, from the forenoon of the 6th to the afternoon of the 20th November 1906

Captain F P Connor, I.M.S., is appointed temporarily to act as Civil Surgeon, and is posted to Manbhum, with effect from the forenoon of the 22nd November 1906

Captain W C Ross, I.M.S., is appointed, with effect from the forenoon of the 26th November 1906, to act as Deputy Sanitary Commissioner, Bihar and Chota Nagpur Circle, during the absence, on deputation, of Major B R Chatterton, I.M.S. or until further orders

Captain W W Clemesha, I.M.S., reported his departure from India, on leave, on the 21st November 1906

UNDER the provisions of Article 260 of the Civil Service Regulations, privilege leave for six weeks is granted to Lieutenant Colonel R E S Davis, M.B., I.M.S., Civil Surgeon, Rangoon, with effect from the date on which he may avail himself of it

THE following appointments, postings and transfer, are ordered in the Medical Department —

Major J Penny, D.P.H., I.M.S., Junior Civil Surgeon, Rangoon, to officiate as Civil Surgeon, Rangoon during the absence on leave of Lieutenant Colonel R E S Davis, M.B., I.M.S.

Captain A Whitmore, M.B., I.M.S., on duty at the Rangoon General Hospital, to officiate as Junior Civil Surgeon, Rangoon

Captain R D Sugol, M.B., I.M.S., is transferred from Moulemein to Rangoon on special plague duty

THE following is taken from the transactions of the General Medical Council —

Army Medical Service

Fifty four candidates submitted themselves to examination, of these, 40 obtained commissions, two were qualified but did not receive commissions, and 12 were rejected. The passes and rejections were as follows —English Conjoint Board—10 passes, no rejections Scottish Conjoint Board—1 pass, 10 rejections Irish Conjoint Board—9 passes, 8 rejections University of Durham—3 passes, 2 rejections University of Edinburgh—1 pass, no rejections University of Glasgow—1 pass, 3 rejections University of Aberdeen—2 passes, no rejections University of Dublin—9 passes, 2 rejections Royal University—4 passes, no rejections

Indian Medical Service

Forty seven candidates submitted themselves to examination, of these, 25 obtained commissions, nine were qualified but did not receive commissions, and 13 were rejected. The passes and rejections were as follows —English Conjoint Board—13 passes, 2 rejections Scottish Conjoint Board—4 passes, 3 rejections Irish Conjoint Board—3 rejections University of Oxford—1 pass, 3 rejections University of Cambridge—2 passes, 1 rejections University of London—2 passes, 1 rejections University of Manchester—3 passes, 1 rejections University of Edinburgh—9 passes, 4 rejections University of Glasgow—2 passes, 1 rejections University of Aberdeen—1 pass, 1 rejections University of Royal University of Ireland—1 pass, 1 rejections University of New Zealand—1 pass, 1 rejections University of Bombay—1 pass

IN modification of notification No 2595—II/1293 1906, dated 19th June 1906, Lieutenant Colonel J Anderson, I.M.S., Civil Surgeon, Lucknow, to hold charge of the current duties of medical officer of the Central Prison, Lucknow, in addition to his other duties, vice Major C B Pail, I.M.S., on leave

THE services of Captain J E Clements, I.M.S., Officiating Superintendent, Central Prison, Bareilly, are hereby placed at the disposal of the Government of India, Home Department, with effect from the date on which he may be relieved of his present duties

MILITARY ASSISTANT SURGEON O G THOMPSON, Civil Surgeon, Gairwal, privilege leave for two months, from the 10th January 1907

MAJOR W H W ELLIOT, M B, D S O, I M S, has been granted an extension of furlough for 27 days

FURLOUGH on medical certificate for one year, under Article 358, Army Regulations, India Volume I (Provisional Issue), is granted to Captain T G N Stokes, I M S, Officiating Civil Surgeon, Bilaspur with effect from the 21st September 1906

Order No 1159, dated the 16th October 1906, is hereby cancelled

LIEUTENANT COLONEL R H CASTOR, I M S, was granted an extension of furlough for one week by the Secretary of State

The following is from the House of Commons —

"Mr Rutherford asked the Secretary of State for India. If he can now say how many Indian Medical Service officers had been appointed as specialists under the Indian Army Order regarding specialists' appointments in India, how many officers so appointed by the Director General of the Indian Medical Service had received the special remuneration authorised for such appointments, and how many were natives of India

Mr Ellis Up to September 20th 1906, fifty eight officers of the Indian Medical Service had been posted to vacancies and drawn the allowance. Only one native of India had applied for recognition as a specialist, and he had received it. I have no later figures, but it was intended at the time mentioned that the other officers who had been recognised as specialists should (unless transferred to civil employment) be posted to appointments as soon as opportunities occurred"

The services of Captain Maung Ba Ket, M B, I M S, are placed temporarily at the disposal of the Government of Burma

MAJOR L ROGERS, M D F R C S, I M S (Bengal), Professor of Pathology, Medical College, Calcutta, is granted privilege leave for two months and fifteen days, with furlough for seven months and seventeen days, in continuation, with effect from the 2nd January 1907

CAPTAIN J W D MCGAW, M B, I M S is appointed to officiate as Professor of Pathology, Medical College, Calcutta, during the absence on leave of Major L Rogers, M D, I P C S, I M S (Bengal) or until further orders

The services of Captain J McO A Macmillan, M B, I M S, are placed at the disposal of the Government of Bengal for employment in the Jail Department. He is posted as Superintendent, Buxar Central Jail and relieved Captain N S Wells, I M S, transferred to the United Provinces

MAJOR L ROGERS, F R C P, I M S has gone home to prepare his Milroy Lectures, which he will deliver before the Royal College of Physicians in London during February. The subject will be the *Kala azar* fever, or Leishman Donovan Infection. These lectures, we understand will be expanded into a volume on the fevers of India, which will be looked for with great interest by Medical men in India and in the tropics generally

MAJOR J K CROSE, I M S, was transferred as Civil Surgeon, from Shahjahanpur to Allahabad

LIEUTENANT COLONEL J MORWOOD, I M S, was transferred as Civil Surgeon from Sultanpur to Shahjahanpur. Notification No 4929 11 118, 1906, dated 13th November 1906, transferring Dr E J Simpson, Civil Surgeon, from Sultanpur to Jalaun, is hereby cancelled

The following gives the rules for the new Urdu examination

With the approval of the Right Honourable the Secretary of State for India, the Government of India sanction the institution of a new literary examination in Urdu, intermediate between the higher standard and the high proficiency tests to be called the 'Proficiency' examination

The following rules for the examination of military officers are published for general information. They will have effect from the 1st July 1907 —

I The examination will be open to officers who can, under the existing regulations, appear at the high proficiency examination in Urdu

II A reward of Rs 750 will be granted to successful candidates

III No officer will be permitted to appear more than three times as a candidate at the examination

IV No officer will be eligible for the reward unless he passes the examination before the completion of ten years, counted from the date of his first arrival in India. No exception to this rule will be made on account of leave on any other cause

V The examination will be held quarterly on the first Monday in January, April, July and October of each year, by the Boards of Examiners at Calcutta and Madras, and the Civil and Military Examination Committee at Bombay. Officers will be examined each in his own presidency, those serving in Burma, will be examined in Madras

VI Officers desirous of attending the examination must submit their applications, to reach the Brigade or Divisional Office by the 1st and the Secretary of Board of Examiners by the 15th of the preceding month

VII The examination will be of a searching nature, the tests both oral and written must be performed with such excellence as to indicate real proficiency

VIII To qualify as proficient, candidates must obtain not less than 75 per cent of marks in each subject and 6 per cent in the aggregate

IX The following are the subjects of examination —

	Marks
(a) Written translation from English into Urdu	100
(b) Written translation into English of passages from the prescribed text-book (<i>Kalam-i-Urdu</i>)	100
NOTE — The text book is obtainable either from the Office of the Board of Examiners, or from Messrs Thacker Spink & Co., Calcutta	
(c) Answer paper in Grammar	100
(d) Reading and translating in Urdu manuscript of moderate difficulty	100
(e) Conversation, including a paper of short idiomatic sentences in English to be translated in Urdu orally at sight	200

The services of Major G Y C Hunter, I M S, Officiating Superintendent of the Montgomery Central Jail, are placed at the disposal of the Government of India, in the Home Department, with effect from the date on which he may be relieved of his duties

The veteran Sir Joseph Fayrer, Bart., I M S (ret'd), celebrated his 82nd birthday on December 6th, 1906

LIEUTENANT COLONEL O R M GREFF, F R C S, I M S, who went home at the end of his time as Civil Surgeon, Simla for two years' furlough, has taken the M D degree, Durham

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co Calcutta

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta

Annual Subscriptions to the *Indian Medical Gazette*, Rs 12 including postage, in India Rs 14, including postage, abroad

BOOKS, REPORTS &c, RECEIVED —

Cancer of the Breast Handley (J Murray) 12s 6d
 Liverpool Memoirs XXI
 Wellcome Laboratory Report, Khartoum
 The Scientific Societies Year Book
 Bacteriological Examination of Water by Savage (H H Lewis)
 The Imperial Bacteriologist's Report
 The Parcel Laboratory Report
 The Mucous Membranes Report
 The Cestode Parasites of Man Stiles
 Swanzy's Diseases of the Eye 9th Ed Lewis

LITERS, COMMUNICATIONS, &c, RECEIVED FROM —

Capt Clifford A Hill, I M S, Helum Major Henry Smith I M S, Jullundur Capt O Moses I M S, Dhuri, Major Jennings I M S, Ahmedabad, Colonel W King, I M S, Rangoon, Capt Cornwall I M S, Madras Lt Col D B Spence I M S, Fyzabad, Capt Gordon Tucker, I M S, Surat

Original Articles.

CEREBRO SPINAL MENINGITIS *

By E. HAROLD BROWN M D (DURHAM), M R O P
(LOND) F R C S (Ed) D P H,

LIFUT COLONEL, I M S,

Surgeon Superintendent, Sambhu Nath Pandit Hospital,
Bhowanipuri, Calcutta

THE subject I have chosen for my paper this evening is one that has of late been prominently before the medical profession

Epidemics of cerebro-spinal meningitis have occurred in New York, in Prussian Silesia, Berlin, Northern Nigeria, Austria, Canada, Dublin, and Northamptonshire. The occurrence of a case at University College Hospital, London, and of another at Liverpool, caused a considerable amount of commotion in those cities, as the medical papers at the time were full of accounts of epidemics of the disease in other parts of the world, but, happily, the disease did not spread in either instance.

In India, outbreaks of greater or less intensity have occurred in various prisons in Bengal, in the Alipore Reformatory School and at the Emigration Depôts at Garden Reach, and towards the end of 1900, I contributed a paper to the *Indian Medical Gazette* based on 53 cases of the disease which had occurred at the emigration depôts.

Since that time there have been 106 further cases, occurring, for the most part, at Garden Reach, but not being limited to that quarter, for some have been admitted to the Sambhu Nath Pandit Hospital from various parts of the southern suburbs, others have been discovered at Cossipore and Chitpore, and I have seen a few in my private practice.

In my opinion cerebro spinal meningitis is one of the endemic fevers of Calcutta, sporadic cases being seen throughout the year, while epidemics of greater or less severity occur from time to time and as a large number of cases has come under my observation, I have been able to devote a good deal of time and attention to this interesting but difficult subject.

SEASONAL PREVALENCE

When the disease assumes an epidemic form, the cases are most numerous in August, September and October, that is during, and just after, the rains.

Of 106 cases observed of late, the distribution has been as follows—

January	10
February ...	14
March	2
April	4
May	9
June	2
July	5
August	23
September	17
October	14
November	4
December	2

It will be observed from this statement that August, September and October furnished 54 cases, or more than half the total number that occurred, while January and February contributed 24, the remaining months, with the exception of May, in which 9 cases occurred, being responsible for very few.

This experience is opposed to the seasonal distribution of the recent epidemic at Lisbon, where most of the cases

occurred during the first four months of the year, months in which, on account of the cold, there would be more or less overcrowding in ill-ventilated rooms, and this would bear out the opinion recently arrived at in New York, viz., that epidemic cerebro spinal meningitis is a "filth" disease spread by overcrowding, bad ventilation and sanitary imperfections generally.

PERIOD OF INCUBATION

This is one of the most difficult problems connected with my subject. In my former paper, I pointed out that the incubative periods of the disease seemed to vary within wide limits, being from one to seven weeks. With my extended experience I find that after the appearance of the first case in one of the depôts (after months of freedom from the disease), subsequent cases generally arise on the 15th, 16th or 17th day. This first case must be looked upon as the focus from which the subsequent ones occur, but repeated infection by fresh arrivals from infected districts probably takes place, and this renders it most difficult to accurately work out the exact period of incubation.

The earliest case that has been observed in an emigrant was one that developed three days after arrival, and here the infection undoubtedly occurred in the district from which the emigrant came, and not at the depôt.

In one instance, an emigrant was in the depôt for 39 days before contracting the disease, and other cases have remained free 31, 32, 34 and 35 days.

In this connection, it is interesting to quote the experience of the Surgeon Superintendent on the emigrant ship *Foith*. When the vessel was 51 days at sea the first and only one case of cerebro spinal meningitis occurred; the patient was a woman who had been at the depôt 20 days prior to embarkation. She died on the fourth day. This instance will illustrate the difficulty experienced in attempting to arrive at the period of incubation.

MODE OF SPREAD OF THE DISEASE

Given a case of cerebro spinal meningitis in a community such as the emigrants at a depôt, how, and in what manner will the disease spread? In most of the infectious diseases the emanations from the patient are responsible for the infection of others in the immediate neighbourhood. Thus, measles, scarlatina, diphtheria, influenza and small-pox are easily spread to a less extent, cholera through the dejecta, typhoid fever through the stools and urine, but in all these diseases those in attendance on the sick are often attacked. It is very different in the case of cerebro-spinal meningitis, which is the least infectious of infectious diseases. I have never seen a person attacked who was in the immediate vicinity of a patient; the first case that occurs may be in the single men's sleeping shed, the next case will probably be in the married quarters or the single women's shed, both far removed from the first, and as the epidemic progresses it will be in this scattered manner. There has been no instance of the disease extending from a man to his wife or children. I have seen a woman, a case of sub acute cerebro-spinal meningitis, nurse her infant for days, the latter escaping, though children are generally regarded to be very susceptible to the disease. In not a single instance has a medical man, a compounder, attendant or employee of any kind been attacked, though more than forty such people mix with the emigrants, keeping them in order, enforcing discipline, feeding and nursing the sick, and mingling with them with an immunity that is not seen in any other disease.

Hence it appears that personal contact is not responsible for spreading the disease, nor can the cause be a general one such as insects of any kind, e.g., fleas, bugs, mosquitoes, lice, flies—as in this case there would be a general outbreak amongst many, rather than scattered cases occurring day by day.

Recently, at a Commission at the Colonial Office, London, appointed to inquire into the disease, Sir Patrick Manson expressed the opinion that if each

* Being a paper read at the Medical Section of the Asiatic Society of Bengal.

emigrant on arrival at the depôt was given a hot bath and a change of raiment, and if precautions were taken to free him from vermin, the disease would be stamped out. This is the only advice given as the result of the Commission, but as such precautions are always taken, I do not think much has been added to the measures that should be adopted to prevent the occurrence of cerebro spinal meningitis.

As personal contact is not sufficient to cause the disease to spread, other methods of infection must be considered. The emigrants, on the whole, are a healthy body of people, as they have already passed a medical examination at the place where they have been recruited, and, as the strong and able-bodied are often amongst the victims, ill health cannot be looked upon as a probable predisposing factor.

As the microbe that produces the disease is often found in the nasal mucus, I thought it probable that a catarrhal condition of the nasal mucous membrane or of the throat or mouth, might provide a suitable nidus for the reception of the diplococcus, but careful examination of those affected did not bear this out.

In cases that survive for a few days it is often noticed that there is a considerable secretion of mucus in the eyes, the lids being covered with it and masses of it collecting at the inner canthi. An examination of this mucus elicits the interesting fact that it often swarms with the specific diplococci, and this leads to the question "Can infection occur from this source?"

It is well known that trachoma is exceedingly common among the emigrants and is often the cause of rejection, in this affection there is a considerable secretion of mucus, and it is quite possible that the diplococci enter by this route, pass through the lachrymal duct into the nose, and thence to the brain by the lymphatics.

I have not met with any success in attempting to produce the disease in monkeys. Rai Ram Brahma Sanyal, Bahadur, Superintendent of the Zoological Gardens, has very kindly performed some experiments for me in this direction. The fluid obtained by lumbar puncture from patients suffering from cerebro spinal meningitis has been injected by him intraperitoneally and intraspinally without any effect. Spraying of the throat has been equally unsuccessful, but, on one occasion, injection of some of the fluid into the anterior nares of a Rhesus monkey was followed by symptoms of fever for a few days. None of the characteristic symptoms of cerebro spinal meningitis developed, however, and the animal was perfectly well in a week.

I have arranged with Mr Sanyal to vary the experiment as soon as a fresh case can be obtained for lumbar puncture, by selecting a monkey with a mucous discharge from the eye, at its inner side.

It must be remembered that the diplococcus is an exceedingly delicate organism and soon dies out in unfavourable surroundings. For this reason I have been careful to use the fluid obtained by lumbar puncture as soon as possible after its removal from the patient, so as to inject it before its vitality can be greatly affected.

I have already referred to the official pronouncement in New York that cerebro spinal meningitis is a "filth disease." By this is meant that it flourishes in such places as are insanitary as regards ventilation, light and cleanliness, and that the overcrowding of human beings tends to its spread.

The conditions under which the emigrants live at the depôts at Garden Reach are anything but unfavourable. They are well housed, are not overcrowded, have very satisfactory ventilation, and spend a great part of each day in the open air. In the warm, dry months, when they can remain out of doors without discomfort, there are fewer cases of the disease than during the cold and the rainy months when they are driven in and herd together more or less, as natives will do to keep themselves warm. So far I admit the possibility of the spread of the disease by want of sufficient air, but in no

way can it be considered a "filth disease" at these depôts where the sanitary conditions are above suspicion.

A point that strikes one as strange is the fact that cerebro spinal meningitis is not recognized by the Civil Surgeons of the districts from which the emigrants are recruited. It has occurred, however, in some of the prisons in the Upper Provinces, and therefore it is probable that cases occur in the outside population too, many cases that occurred in Calcutta a few years ago were mistaken for plague, and I have seen a case of the disease that occurred in a jail when there was an outbreak of plague at the time. I diagnosed the case correctly, though my diagnosis was challenged by others, but its correctness was established at the *post mortem* examination.

SYMPTOMS

I shall not dwell on the symptoms, as they are so well known and were fully discussed in my former paper and all that is necessary here is to allude to the four classes of cases seen clinically. These are—

- (a) the fulminant cases,
- (b) the acute ones,
- (c) the sub acute, and
- (d) the atypical ones.

In the first class are those which occur with extreme suddenness without any premonitory symptoms, and which always terminate fatally within a few hours. These are the most terrible forms of disease. I know of nothing in medicine so immediate, so hopeless, and so mortifying as a fulminant case of this disease. Emigrants are well placed for medical observation, as there is always a qualified medical man on the spot, and, when cerebro spinal meningitis occurs in a depôt, every slight ailment and every ache and pain is promptly and carefully investigated. Hence it follows that the disease is detected at its earliest stage and the duration can be stated with precision. In one case, recently, a man previously healthy, complained of feeling suddenly ill, he had intense headache, with vomiting, diarrhoea occurred, the temperature shot up, unconsciousness quickly set in, and he died within three and half hours of the onset of the symptoms. This is the shortest duration that has come under my notice, but three others have died in five hours and others again in 7, 12 and 14 hours. Most of them have died at the depôt, as there has not been time to remove them, and some have died on their way to hospital. At the Sambhu Nath Pandit Hospital, recently, six cases have died within twenty four hours of the onset of symptoms, all these were placed in the "fulminant" class, whose mortality is 100 per cent.

Almost as bad are the "acute" cases, which also occur suddenly but in which unconsciousness is delayed much longer than in the class just referred to. The temperature is high before coma sets in there is great restlessness, with intense headache, vomiting and, as a rule, diarrhoea. Hyperæsthesia of the general surface of the body is the rule, with pain and tenderness at the back of the neck, but well marked retraction of the head is not common till 36 hours after the commencement of the symptoms. If the patient lives as long as this, his decubitus is generally lateral with the knees drawn up, and the picture reveals the disease at a glance. In this variety herpes is common if life is prolonged for a few days, but petechiæ are very much less frequent than in the sub acute cases. In fact they are extremely rare. The limbs become stiff, a periarthritis causes the joints to become swollen, the patient is apathetic, coma sets in, and death occurs in 80 per cent of the cases. Kernig's symptom is generally present, but I do not think it gives much assistance in arriving at a diagnosis.

Of the acute cases treated recently, nine have died within two days, six in three days, three in four days, and two in five days. If the patient lives for five days, the prognosis is more hopeful.

In the sub acute cases the symptoms are much less pronounced at first, but often deeper gradually. The onset is less abrupt, there is little or no fever, but headache

is always marked and vomiting is frequent, pain in the neck sets in, with stiffness, and pain shooting down to the shoulders general hyperæsthesia occurs, and the patient is often restless and noisy during the first week improvement, when it occurs, is generally very slow, the patient being extremely thin and weak for a long time even months. When fatal, death may not occur till the end of the fourth week a few cases linger for months, eventually dying of marasmus some remain permanently deaf, others have paralysis of the third fourth or sixth nerves very occasionally hemiplegia results. In not a few cases the patient drifts into a condition of dementia.

It is in these cases that one sees purpuric rashes, varying from petechiæ to large patches or elevated papule may be seen which may persist for weeks.

The mortality of this variety varies from 50 to 60 per cent, but many of those who escape with their lives are the subjects of some of the sequelæ mentioned.

The atypical cases are the rarest, and occur chiefly in the young, they sometimes set in suddenly, like those under the head "acute," but they soon improve and recover completely in a few days. None of the cases in this class die.

MORTALITY

In my series of 106 cases there have been 68 deaths a mortality of 64.15 per cent.

Of these 69 were treated in the Sambhu Nath Pandit Hospital in 1906, of whom 41 or 59.4 per cent died.

Of this number—

6	died within	24 hours
9	" "	2 days
6	" "	3 "
3	" "	4 "
2	" "	5 "
3	" "	6 "
4	" "	7 "
5	" "	8 "
3	" "	10 " or later

In my former series of 53 cases, 36 ended fatally, a mortality of 67.92 per cent, so the epidemic under consideration has been slightly less fatal than that of 1900.

At the hospital, nearly a third of the total number of deaths took place within 3 days, those embracing the cases in the "fulminant" and "acute" groups of whom, on an average, 90 per cent die, a considerable number perishing before treatment can be adopted.

DIAGNOSIS

A case that has lasted two or three days is so typical that it can be detected almost at a glance. The patient is usually on his side, with his knees drawn up his head is retracted, he is either comatose or semi-conscious, if not insensible he is restless, moans or utters a single sharp cry at times, and puts his hand to his forehead, or the back of his head, as if indicating a pain there.

There is a considerable rise of temperature, 103° or higher the pulse may be full and quick feeble and irregular, or in rare instances, slow as the case progresses, it becomes smaller, weaker and irregular. Kernig's sign is present.

There is generally hyperæsthesia all over the body and extremities, so that pressure causes pain, and in a doubtful case, which subsequently proved to be cerebro spinal meningitis, I have seen a mistake made, and plague diagnosed, because the patient winced when pressure was made in the groin.

The eyes, as a rule, are closed, and the lids are often stuck together with mucus, strabismus is not uncommon, ptosis and the other signs of paralysis of the third nerve are sometimes seen.

Herpes is common in the acute cases roseola and various other rashes in the sub acute ones.

A fulminant case, if it be the first case in the epidemic, is very likely to be mistaken for sunstroke or

apoplexy as the invasion is absolutely sudden and death occurs within a short time.

Acute cases may be taken for plague, malignant forms of malaria, influenza of cerebral type, pneumonia with invasion of the meninges by the pneumococcus, or tubercular meningitis. If retraction has occurred, lumbar puncture will settle the diagnosis, as a microscopic examination of the fluid removed will reveal the presence of the specific diplococcus. Earlier in the disease the diagnosis is difficult, unless other cases have occurred in the vicinity, and it will be necessary to examine the blood in order to exclude malaria. To one who has seen a large number of cases of the disease the decubitus and general appearances are characteristic, but cannot be described in words.

As I have written at length on the diagnosis in my earlier paper, I shall not pursue the subject any further on this occasion.

TREATMENT

This depends upon the type of the disease and its duration. In the fulminant cases little can be done beyond placing the patient in bed, applying an icebag to the head, or a blister to the back of the neck and administering an enema of cold water. These cases, however, are always fatal, and are seldom seen in a General hospital, as they either die at the place where they occur, or while being removed.

The acute cases are almost as hopeless, but prompt treatment will save a few and should be thoroughly carried out. This includes an icebag to the head, a blister to the back of the neck, 5 grains of calomel on the tongue, if the patient can swallow, a mixture containing Iodide and Bromide of Potassium, otherwise the same drugs are given per rectum. As soon as retraction is noted, lumbar puncture should be performed and should be repeated daily as long as necessary. I have not found this measure useful before the second day but, as a rule, wait till the third and then repeat it as often as indicated by the symptoms.

Out of 69 cases received at the Sambhu Nath Pandit Hospital last year, 28 were treated by lumbar puncture and 20 by lumbar puncture plus the injection of half an ounce or less of a 1 p c solution of formol. Of the 28 cases treated by lumbar puncture alone, 16 died a mortality of 55.5 per cent, among the 20, who, in addition, received an injection of a solution of formol into the spinal canal, 10 or 50 per cent died. It is my practice to remove as much fluid as will escape by lumbar puncture and to inject a smaller quantity of the formol solution through the same needle, the results have been rather encouraging, and I hope to be able to give the treatment a more extended trial.

Quite recently Drs F. Vidal and Louis Ramond reported a case of cerebro spinal meningitis treated by lumbar puncture and intraspinal injection of col-largol. They employed 5 c c of a 1 p c solution, with rapid improvement, three days after the injection the meningococci were still present in great numbers, and full of activity, and the cerebro spinal fluid did not become sterile until it had been for six days in contact with the silver solution.

M. Charles Goptel communicates an analogous case, vide B. M. J., Nov 10, 1906, and I am of opinion that the treatment of the disease by lumbar puncture and the subsequent injection of a solution of a germicide will prove the best means of saving life.

Finally, as to the precautions to be adopted in a depôt on the appearance of the disease.

The measures carried out at the depôts in Garden Reach are the result of years of experience.

To begin with ordinary sanitary measures are rigidly enforced personal cleanliness, living out of doors as much as possible, clean clothing, a sufficient amount of cubic space in the sleeping sheds, free ventilation, repeated cleansing and sweeping of all sheds, with a subsequent liberal spraying with an antiseptic solution.

Prompt removal of those attacked, evacuation of the sleeping sheds in which cases have occurred, the floors

are then dug up to the extent of two or three inches (unless made of cement), and fresh earth mixed with lime is then filled in. The roof of the shed is removed, in order to let the direct rays of the sun into every part of it for a week. The walls are thoroughly sprayed with carbolic or other antiseptic lotion, and the sleeping platforms are removed, placed in the open air exposed to the sun and are scrubbed and washed before being replaced.

Contacts are segregated and carefully inspected two or three times a day, and new arrivals are placed in the observation sheds.

None of these measures have created a panic. The emigrants are encouraged to enjoy themselves and are given light occupation if they desire it. They are also frequently warned to report themselves at once if they feel at all out of sorts and the slightest indication of headache, fever or any other symptom is immediately attended to.

A CASE OF "TYPHO MALARIAL FEVER"

By CLIFFORD A. GILL,

CAPTAIN, I M S,

Jhelum, Punjab

I AM aware that the use of the above title is open to objection and that its employment is rightly deprecated by the best authorities, but I know of no more appropriate expression to employ for a case, like the one I am about to describe, in which *enteric fever* and *malaria* co-existed and ran concurrently at one and the same time without it being possible to say which disease was the dominant factor in the situation.*

This condition, I should imagine, is of sufficient rarity to render it worthy of record in the pages of the *Indian Medical Gazette*, but at any rate its diagnosis must always be attended with such unusual difficulties as to make it a matter of interest.

The patient was a young married lady, who arrived in India about 18 months ago, up to the date of this illness she had always enjoyed good health, and had in particular never suffered from malaria or enteric fever, nor has she been inoculated against the latter disease. Up to the date of her illness she was "nursing" an infant three months old, but this of course was discontinued when she became definitely ill.

History of the illness—The disease may be said to have begun some weeks before the patient took to her bed, though this was not recognized at the time.

On November 24th, 1906, while out in camp with her husband, the patient had a slight shivering fit followed by fever, the degree of the latter was not ascertained. She felt perfectly well the following day and on November 27th she rode 19 miles.

On November 30th, she had an attack of ague typical in every respect, the temperature reaching 103.8°F. On the next day the temperature was normal and the patient felt none the worse for her attack.

From the date of the first attack she was put on 5 grains of quinine twice a day, but as the latter was in the form of pills obtained from a local dispensary and "as hard as bullets," it is difficult to know whether they were absorbed or not.

On December 4th, the patient had high fever again, and this was attributed to follicular tonsillitis from which she was found to be suffering. It however, yielded quickly to treatment, and in a few days the temperature became normal and she had apparently quite recovered, though she still continued taking quinine now in tabloid form.

On December 11th, she had again a slight attack of shivering followed by fever (temperature 100°F), the following day she was about again and continued so until December 18th when she felt "everything was an effort," but she had no temperature or headache and her appetite was normal.

On December 19th, she felt rather worse, but she went for a bicycle ride in the morning, and in spite of feeling rather cold and shivery returned to her bungalow and ate a hearty tiffin.

In the afternoon I saw her and found the temperature to be 102.5°. From this time onward the patient was confined to bed, and the illness may be said to have definitely begun.

On reviewing the above it reads by no means like the onset of enteric fever, and I came to the conclusion at the time that the case was an ordinary one of intermittent fever. It will be observed that the fever came on roughly at weekly intervals, quinine, however, seemed to have little or no effect, though she was taking 10 grains a day for the whole period from November 26th to December 19th—true for a portion of this time it could not be relied on. On the other hand, the periodical attacks of fever suggest a malarial infection, and one of these was absolutely typical of a fit of ague. It is noticeable, too, that the patient remained apparently perfectly well between the attacks, and it is stated that the appetite was if anything above normal—perhaps the call on the system occasioned by "nursing" may have something to do with this.

The history therefore strongly suggests a malarial infection.

Onset—The disease commenced comparatively suddenly, but was not ushered in with a rigor. During the first four days, December 19th—December 22nd, the following symptoms were noted—

General condition—Good. The temperature remained between 101°F and 103°F. Face slightly flushed, conjunctivæ normal, not tinged yellow at all. There was no headache to speak of, no photophobia. The skin was hot and dry.

* We would prefer such a term as "enteric malarial" or simply "combined malarial and enteric fever" for this combined condition, not because we like the term "enteric" but because in the term "typho malarial," the word "typho" was, of old, used to denote serious cases of a continued fever with stupor (*typhos*), which were recognized to be more severe than malaria but which were not acknowledged to be "typhoid"—ED, I M G

Respiratory system—Normal There was no bronchitis Pulse remained about 100, it was regular in rate and rhythm, of moderate tension and was not diastolic

Digestive system—Tongue slightly furred in centre, but moist and not tremulous Vomiting not present, though on two occasions emesis occurred associated with the taking of the quinine mixture

Bowels slightly constipated

Abdomen—Liver or spleen not palpable, the latter on percussion does not show any appreciable enlargement, nor is there any tenderness in the left hypochondriac area The abdomen is not tender or tumid, and there is no gurgling in the right iliac fossa There are no spots on the abdomen

Urinary system—Urine has the usual febrile qualities, otherwise is normal

Nervous system—Nothing abnormal detected, sleep both by day and by night is fair, but disturbed by dreams

The condition of the blood will be referred to later During this period when nothing more serious than an attack of malaria was suspected, the treatment was confined to keeping the bowels open and administering quinine gr x in liquid form, as recommended by Rogers, twice a day On the 22nd December this was stopped on account of it causing vomiting, and intramuscular injections of bichloride of quinine gr ix were given instead

The diet throughout was milk and beef tea

Progress of the disease—On December 23rd, the fifth day of disease, the patient began to feel really ill, the mental state which had previously been one of alertness gave place to a more apathetic condition At this time the possibility of enteric fever was first seriously considered Headache was now marked for the first time, and the patient became rather restless

On the sixth day of illness, these symptoms were still more marked, and the patient slept little or not at all on the preceding night A few spots were noted and "ringed" on the abdomen On the assumption that the case was one of enteric fever, nurses were telegraphed for in spite of the fact, which will be mentioned later, that malarial parasites had been discovered in the blood The patient's condition became progressively worse during this day, the headache being very severe At 7 P.M. trional gr x was given which rather unexpectedly quickly had the desired effect, and patient awoke after two hours sleep with the headache almost gone She subsequently slept well all night, and in the morning declared herself to be much better and to have no headache at all The skin was moist for the first time, and all she complained of was dryness of the throat The tongue was noted as being moist and slightly furred The spots on the abdomen were more numerous, they resembled "rose spots" of enteric fever, but were not typical, for most of them disappeared with

difficulty on pressure, and a certain amount of infiltration could be felt around their bases Over the sternum a blotch, the size of an eight-anna bit, was observed, and a few more spots were noted on the chest

On the following morning, the eighth day of disease, the temperature reached 99°F The patient had a good night and only complained of extreme weakness, the improvement of the day before being well maintained There was no headache The bowels were opened without medicine, and the stools presented no unusual features beyond their pale colour, which was due to the strict milk diet

The spots on the chest and abdomen were more numerous especially on the chest The general condition of the patient was totally unlike that usually associated with enteric fever, and the suggestion was made that the rash may have been due to the quinine administered intramuscularly In view of the time of their appearance, which did not directly follow the first intramuscular injection on the 4th day of illness, but began to appear on the 6th day, and disappeared after lasting three or four days to be replaced by a fresh crop, it appears probable that it was a true enteric rash

On the 9th day of disease, the patient had a very profuse sweat during the early hours of the morning, after which the temperature registered 99°F

The history of the next four days resolves itself into a low morning temperature, and a progressive decreasingly high evening temperature followed in the night by very profuse sweats resembling the night sweats of phthisis The rash on the abdomen was still present, though not so marked as formerly Other symptoms were conspicuous by their absence, the appetite had returned, and the patient was anxious to have solid food

It will be noted that the temperature first showed signs of remitting on the 7th day of disease, and finally came down to normal on the 14th day of illness

The Blood—Examinations of blood-films for malarial parasites were naturally a feature of the case, and were made almost daily throughout the course of the illness The films, made in the usual manner with cigarette paper, were stained by Leishman's method

Up to December 22nd no parasites were discovered, but the patient had been taking 20 grains of quinine daily, on this date a parasite was found, which in every respect resembled the sexual form of the parasite, but as no intra-cytoplasmic bodies were detected, not much stress was attached to this

The following day a blood count was made, but not possessing a hæmocytometer was unable to count the leucocytes, but, judging from the number of those present on blood-films, as compared with a similar sample of my

own blood, there did not appear to be any marked leucocytosis

An average of three differential counts of the white corpuscles gave the following results —

Polymorphonuclear	53%
Large mononuclear	17%
Small mononuclear	18%
Eosinophiles	5%
Transitional	15%
Blood platelets ..	very plentiful

On the 25th December (7th day of disease), an important discovery was made. In three slides taken on this day, flagellated bodies were discovered. Four in all were found. These were very distinct, the flagellated body being about half the diameter of a red-blood corpuscle, one, two or three flagella proceeded from each, in one case a free flagellum was lying near at hand, in another a small node-like appearance could be seen in the length of the flagellum, in some, but not all cases, at the point when the flagellum left the parent parasite, a small nucleus-like body was seen. In one case a flagellum lay right across the breadth of a red-blood corpuscle.

No crescent bodies or intra-corpuscular parasites were discovered after lengthy search, but malaria was definitely diagnosed on these facts, and the cause of the rash was for the time being left *sub judice*.

On December 29th intra-corpuscular parasites were discovered after prolonged search for the first time, they had the characters of benign tertian parasites.

A sample of blood was also sent to the Pasteur Institute, Kasauli, chiefly on account of the rash, on December 30th, the 12th day of disease. The following report was received —

Enteric fever	Complete agglutination with 1 in 80 dilution
Malta „	No agglutination with 1 in 20 dilution

Subsequent history—From the 14th day of disease the patient rapidly regained strength, and after the temperature became normal, no longer suffered from night sweats. The only effect of the positive reaction to Widal's test was to somewhat retard the return to solid food.

On January 9th, the 22nd day of illness, the temperature again rose to 100.8° and the following evening to 101°, the next morning the temperature was normal, and the patient awoke bathed in perspiration. Nothing was found to account for this, and the patient subsequently made an uninterrupted recovery.

Remarks—The complete diagnosis in this case was beset with many difficulties. It was recognized to be a case of either remittent malarial fever or enteric, but the possibility of both of these diseases being present was for some time not entertained. The history of the illness strongly suggested malaria, as did all the symptoms of the developed disease with the important exception of the rash. The blood examinations alone revealed the compound nature of the case,

the finding of malarial parasites and the positive reaction to Widal's test being the most important features in the diagnosis.

Incidentally the blood examination showed also a probable absence of leucocytosis, but the differential count of leucocytes was equally applicable to enteric fever or malaria, absence of increased relative proportion of polymorphonuclear cells, with relative increase of large mononuclears, being characteristic of both.

Clinically the 7th and 14th days in the disease were the critical days, a marked change for the better took place on the 7th day, and the temperature eventually reached normal on the 14th day. It will be noted that the temperature tended to show a weekly periodicity from the beginning.

Finally, there is the return of temperature on the 22nd day of illness, lasting for two days, and ending by crisis and profuse sweating. This, I believe, to have been due to a return of malarial fever, for I am unable to account for it on any other grounds.

It may be mentioned that to the end of the illness, no enlargement of the spleen could be detected by palpation or percussion. In conclusion this case illustrates, amongst other things, that the finding of malarial parasites in a doubtful case of illness, does not necessarily exclude other diseases, and that the business of the microscope is to supplement, and not to replace other forms of diagnosis. On the other hand it equally shows that in all anomalous cases of fever, in addition to careful clinical observation, the blood should be invariably examined for malarial parasites and for the agglutinating reaction of various micro-organisms.

I have to thank Captain Harvey, I.M.S., Director of the Pasteur Institute, Kasauli, for kindly examining the blood for Widal's reaction and also Captain Cowin, I.M.S., for help in the treatment of the case.

NOTES ON THE HIGH RATE OF INFANTILE MORTALITY, &c, IN THE CHINGLEPUT DISTRICT

By J. C. MARSDEN,

LT COLONEL, I.M.S.,

Acting District Medical and Sanitary Officer

2 *Utteramerur*. I re-visited the place on the 16th ultimo, and made a careful enquiry into the subject, aided by the Deputy Tahsildar* and the Hospital Assistant†. The birth and death registers were scrutinized, and seven village munis,‡ two barber midwives, the hospital midwife, and a few others were questioned and cross-questioned. The statistics in *Utteramerur* refer to three villages, sub-divided into seven blocks, and the registration is carried out by seven individuals, one for each block.

* Revenue and magisterial officer

† Medical officer in charge of a dispensary

‡ Headmen of villages

DATE OF OBSERVATION		DEC 19	20	21	22
DAYS OF DISEASE		1	2	3	4
TIME		A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.
TEMPERATURE					
CENT	FAHR.				
42					
	106				
41	105		>		
	104				
40	103				
	102				
39	101				
	100				
38	99				
	98				
37	97				
36					
PULSE		104	98	100	104
BOWELS		1	1	0	2

Notes recorded at Annual Inspections

Number	Name of place	Number of infantile deaths			REMARKS
		1901	1902	1903	
1	Utterameru Union*	86	87	135	Registration very defective But for further account of this place <i>vide infra</i>
2	Madurantakam Union	40	51	67	Causes of death—vague Bowel complaints amongst children very prevalent
3	Saidapet Union	105	104	112	Too many deaths shown from "all other causes"
4	Ponneri "	115	133	108	Causes of death—vague
5	Satyavedu (non Union) village	Not available at time of inspection			Death registers full of mistakes Causes vague and inaccurate
6	Conjeevaram Municipality	261	273	289	Room for improvement Too much guess work
7	Tiruvallur Union	71	59	57	Causes vague, "mantham" a frequent term
8	Sembayam "	Not recorded at time of inspection			Death registers not accurate Actual causes of death hardly ever stated
9	Wajababad "	Do			Terms "old age," and "mantham" are too frequent Probably some of the latter were really due to cholera
10	Cheyur "	Not recorded at time of inspection			"Old age," "weakness" and "mantham" occur too frequently
11	Pulicat "	9	13	26	Nearly every death shown from "Fever," even in infants of a few days old "mantham," strange to say, conspicuous by its absence
12	Tiruvathiyur "	139	66	76	Many inaccuracies A very large number of deaths from "mantham" and "dropsy" shown under all other causes
13	Tirupporur "	21	19	20	Deaths inaccurately entered The term "mantham" appears too frequently
14	Chingleput Municipality	89	73	80	"Diarrhoea" and "convulsions" are the most common recorded causes for infants, and a fair number from "premature birth"

* N B A "Union" is a sort of petty Municipality

The total population is 11,006 According to the statistics for the current year, 1904, the infantile deaths in the first two quarters were as follows —

January	21	} = 39—1st quarter
February	9	
March	9	
April	7	} = 29—2nd do
May	7	
June	15	
		68 for half year

"Mantham" has been recorded 37 times, and "sevapu" 11 times, the ages ranging from one day to one month, whilst "still-births" account for 11 of the total number One death in an infant of one day old is recorded as due to "possession of a devil"! Some of the registers show a larger variety of terms than others, "mantham," however, appears to be a convenient term and probably when the registrars can think of nothing else to say, they simply enter the term "mantham" Nothing to throw any light on the subject can be found in the dispensary returns, where the prevailing diseases are shown as those of the "skin," "abscesses and ulcers," "diseases of the digestive system," "diseases of the ear" and "worms" The Hospital Assistant states that infants are rarely brought to him for treatment, and the ones that are brought are generally found to suffer from "itch" or "worms"! He is evidently not regarded as capable of treating "mantham," but the services of an old barber-midwife, bent double with age and infirmity, are in great requisition, as well as those of another middle-aged barber woman! They

both consider "mantham" to commence as diarrhoea due to errors of diet on the part of nursing mothers, and the younger woman also describes symptoms pointing to obstruction of the bowels, followed by infantile convulsions They treat the disease with some preparation of castor-oil

The disease "sevapu" is described as commencing with blue spots on the skin, all over the body, changing to black, followed by general weakness, pain, contraction and spasm of the throat, with inability to swallow, and subsequently death from inanition

They attribute the disease to maternal errors of diet during pregnancy, and they treat it with decoctions of the leaves and root of the indigo plant Neither of these women can, however, throw any definite light on the high infantile mortality

The hospital midwife on being questioned, describes "mantham" as diarrhoea, with undigested food in the stools, inability to suck, and distension of the abdomen She administers castor-oil

She describes "sevapu" as a black discoloration of the lips, with blue spots on the hands and feet, and inability to swallow She administers no treatment

Vythrans * were sent for, but none made their appearance The gist of the evidence points to "mantham" being a bowel complaint, (enteritis probably,) and also a convenient term for registration when the cause is unknown, (just as "debility" used to be a convenient term some years ago in hospital and dispensary statistics!)

"*Sevapu*"—Nothing definite can be elicited. The hospital assistant thinks either "Icterus neonatorum" or "Phlebitis of the umbilical cord" may be meant. I am not, however, aware that the yellow colour of jaundice appears as a blue or black discoloration in native infants. The nearest probability is infantile tetanus (or *Tismus neonatorum*), due to careless treatment of the cord and navel in new born infants.

As regards the town of Utteramerur itself, the usual want of sanitation exists here as elsewhere, it is surrounded by wet cultivation, and there was excessive rain last season.

Dealing with the whole question generally, I can discover no *unusual* reason for this high infantile mortality, and it is not due to plague. That suspicion may, I think, be safely excluded. Bad sanitation is quite enough to account for it. I have made a point of carefully examining the death registers, whenever possible, on my tours of inspection, and I have found many defects (*vide supra*) which I have pointed out to the registrars then and there. I have noted "*mantham*" to be a very common term, a large population of infantile deaths being ascribed to that cause nearly everywhere. As far as I can make out, it points to infantile diarrhoea or enteritis, and sometimes it ends in convulsions, (though I may say, *en passant*, that the term "convulsions" is also itself used frequently and generally vaguely!) Like the summer diarrhoea of children at home, this "*mantham*" is very fatal. I consider it to be produced by ill-feeding, maternal errors of diet, direct exposure, etc., and considering the unhygienic conditions under which native infants are reared, *the wonder is not that the mortality is high, but that it is not still higher!* It is only a case of survival of the fittest!

As to "*sevapu*" the vague nervous disease above alluded to, it is probably due to some septic infection, and is probably, as I have already stated, infantile tetanus.

Under recent Government orders, the medical subordinates have all been directed to carefully scrutinize the registration of vital statistics, in the manner laid down. I myself personally do so at my head-quarters station, as well as those outstation returns that pass through my office.

I do not see what more can be done than to continue this system, and to preach sanitation in season and out of season, and whether the people will hear, or whether they will forbear! But the ingrained habits and customs of centuries cannot be altered in a day.

ALBUMOSURIA AND THE DURATION OF ALBUMINURIA IN CHOLERA

By U N BRAHMACHARI, M A, M D,

Teacher of Medicine, Campbell Medical School, Calcutta

THE constant presence of albumose in the urine of patient suffering from cholera after suppression has ceased is, as far as I am aware, a new observation. In all the cases that I have

examined this seems to be as constant as the albumen. In some of my cases the albumose seemed to disappear from the urine before the albumen, and in very rare cases the albumen disappeared before the albumose. I append here a table containing the results of examination of the urine of 40 consecutive cases of cholera, in all of which I found the constant presence of albumose and albumen.

The amount of albumose present varied from a mere turbidity to a distinct precipitate. The degrees of albumosuria and albuminuria were not proportional to each other in all my cases. In a few cases there was a mere trace of albumose, while the quantity of albumen was large.

What is called here albumose was characterized by the following tests—

(1) Not precipitated by heat.

(2) Precipitated by HNO_3 . This precipitate is soluble on boiling and reappears on cooling.

(3) The precipitate with HNO_3 was granular under the microscope and was never crystalline.

In some of my cases, the urine was boiled with a 10 per cent solution of Trichloroacetic acid and filtered hot. The filtrate gave a precipitate after cooling for 24 hours. This precipitate was granular under the microscope and soluble on boiling. The precipitate with HNO_3 or Trichloroacetic acid never gave the murexide test for urates or uric acid.

The average period of albuminuria in my cases was much greater than that described by any previous observer. Calculating from my cases, it will be seen that the average period during which albumen is present in the urine of a patient who had an attack of cholera is about 120 hours, *i.e.*, nearly five days.

Nos	Albumosuria	Duration of Albuminuria	Duration of Albumosuria
1	Present	36 hours (death)	36 hours
2	"	60 "	30 "
3	"	24 "	12 "
4	"	60 "	12 "
5	"	84 "	60 "
6	"	36 " (death)	36 "
7	"	132 "	132 "
8	"	172 "	132 "
9	"	300 "	300 "
10	"	196 "	196 "
11	"	132 "	132 "
12	"	64 "	64 "
13	"	120 "	120 "
14	"	144 "	144 "
15	"	60 "	60 "
16	"	132 "	132 "
17	"	132 "	—
18	"	72 " (death)	—
19	"	60 "	—
20	"	36 "	—
21	"	208 "	—
22	"	54 "	—
23	"	54 "	—
24	"	114 "	—
25	"	204 "	204 hours
26	"	240 "	240 "
27	"	80 "	80 "
28	"	64 "	64 "
29	"	200 "	200 "
30	"	96 "	120 "
31	"	96 "	72 "
32	"	66 "	66 "
33	"	300 "	300 "

RHEUMATISM

ITS FORMS, COURSE PREVALENCE, ETIOLOGY IN RELATION TO THE PECULIAR CONDITIONS OF THE SOIL AND CLIMATE, AND TREATMENT ADOPTED, BEING A SHORT RESUME OF 976 CASES TREATED (1897-1906) AT THE NORTHERN INDIA SALT REVENUE HOSPITAL AND JODHPUR RAJ DISPENSARY AT BHATKI SANCHOR LUNI SALT SOURCES, MARWAR

By R P BANERJEE,

Udaipur, Rajputana

ASSENT my paper on Rheumatism published in the *Indian Medical Gazette*, Vol XXXI, No 9 September 1896, I beg to lay before my *confidés* fresh observations on 976 cases of different forms of rheumatism treated by me

Bhatki Salt Source comprising an area of 1,242 square miles, situated between $25^{\circ} 6' N$ and $25^{\circ} 12' N$ latitudes and $72^{\circ} 21' E$, and $72^{\circ} 24' E$ meridians at 1292 4 feet above the sea level, less variations and corrections the average annual reading of aneroid was 28 732 inches—the tract is wedged between Deesa, Vas, and Thrad districts of Pilibpuri Agency, and Patan district of North Gujarat on the south and south east and due east, and Sivanr, Jusol Balotra Mullan districts of Marwar, and Jharparkei districts of Sindh on the north east, north, north-west and due west—traversed and watered by the Luni and Sakura rivers, their affluents and effluents and numerous feeders which only originate during rains. The soil divided into cultivated lands and extensive salt tracts, cut up by sand duns, open level grounds, modest jungles, towns and villages and arid wastes and rocky hills. Saline deposits consisting of chlorides of soda, potash, sulphates of lime, potash, soda and magnesia, carbonates of iron, lime, potash and soda, silica, silicates of magnesia, mica, traces of manganese, and rocky debris, washed down the clay shales, recent slates, chalk, and marble, dolomitic crags, lime and sandstones, and fine grits and clay from gorges, and mounds form the earth's crust

Climate, very variable to the extremes, in January the air falls to $46^{\circ} F$ and during May and June it rises to $120^{\circ} F$, the average winter temperature is $65^{\circ} F$ and the summer $105^{\circ} F$ (as observed during 1897-1906). The place is noted for hot dust storms usually of local origin, and squalls during winter months of December, January, February often prolonged over to April

Population—mode of living habits—Though the villages and towns are set apart from each other, yet they themselves are much overcrowded, people are lazy, untidy and very dirty, and live upon the produce of scanty cultivations and live stocks, fields are watered by hand irrigation, or by inundation of the rivers during rains. The staple food grains are—

Bajree (*Penicillium Spicatum*),
Moong Dal (*Phaseolus Mungo*),
Mot (*Phaseolus Aconitifolius*)
Chhola (*Cicer Arietinum*)
Chouli lobhya (*Dolerchos Sinensis*)

Kalinga seeds of melons, and dried legumes of (acacia ferruginea) khyar tree

Excepting Rajputs and Musalmans other classes of people are mostly vegetarians, goats and sheep are consumed by the flesh eating classes, games are prohibited and controlled by the Darbar authorities

Sanitation—Scientific sanitation nay the simplest rules of cleanliness are forgotten, even the people are dead to any advice in that account. Men and animals live, and drink together. Water supply, in out of the way places, consists of pits dug into the soil about the river basins or dried up pond beds. Sweet drinkable water is scarce during drought months. The rivers putrily dry up and form salt deposits. People and animals alike relish saline or brackish water during the greater part of the year

Pollution and contamination of drinking water are novelties and not known, preservation never attempted,

and purification never dreamt of,—nay, the people are averse to any introductions

During winter pneumonia, dysentery, rheumatism, soreys, tonsillitis and other chest affections are common, and during rains and immediately after that, during September and October, neuralgia, malarial fevers, intermittent forms of joint affections, rheumatic pains are rife—during summer, ulcers, skin diseases, and guinea worm, and heat apoplexy are prevalent. During the period of eight years (1897—1906) no epidemic of any kind occurred in the district. During early winter months (September and October) when the vegetation, water, moisture, and dampness were pre eminently excessive these tended to harbour swarms of mosquitoes and fleas, which attacked men and animals dangerously inasmuch as the mortality from double tertian, and tertian fever was very great. Venereal diseases are not known, if at all any cases came to notice, they were introduced from the Gujrat and Sindh sides

The forms of rheumatism treated were—

Syphilitic 98, Tubercular 12, Malarial 242, Mitastatic 183, Dyspeptic 28, Gonorrhoeal 51, Seasonal 139, Puerperal 11, Septic 30, Varicose 12, Traumatic 4, Sappurative 16, Dipsomaniac, 25, Albuminuric 21, Cardiac 10, Due to unassignable and indifferent causes 64, Shamming or malingering variety, 31, in all 976 cases were treated and duly observed. A full report was sent to the Residency Surgeon, Western Rajputana States, Jodhpur, (and this is a condensation from it) with my annual reports of the Dispensaries for year 1905—1906

I—SYPHILITIC RHEUMATISM

Affected all the joints like, large and small, knuckles, wrist and ankles are especially affected. Pain increases at night and is of a very acute gnawing character

Observations—

- 1 Pain increased (between 10 P M and 4 A M) at night
- 2 Pain was more acute in men than women
- 3 Invariably attended with neuralgia
- 4 Fever rarely present, and never very marked
- 5 This form of rheumatism noticed only in the secondary and tertiary forms
- 6 Gummata existed over the clavicular sternal articulations, and the shin bones (Tibie)
- 7 Skin was invariably variously affected, psoriasis, and ecthyma were mostly present
- 8 Debauch and irregular living manifested themselves in the severity of the symptoms
- 9 Women were mostly amenorrhoeic, barren, abortive, or gave birth to dead and immature foetus, or to children that never survived 5 to 11 years
- 10 Well seasoned foods, hot spices, increased pain and uneasiness, extremes of temperature were tolerated well

Treatment—All ordinary courses of antisyphilitic and alterative remedies with tonics and good nutritive diet were used. Hypodermic injection of Perchloride of mercury (tablets $\frac{1}{10}$ or $\frac{1}{16}$), reduced the pain and swelling without salivation, if persevered with other tonic remedies

Remarks—I lost none, and syphilis was not very much advanced

II—TUBERCULAR RHEUMATISM

Knees and elbows were the seat of disease generally, all occurred in advanced stages of consumption (tuberculosis), joints were puffy, swollen and painful

Observations

- 1 All had Phthisis
- 2 Pain dull aching, movement increased it, night exacerbation never noticed
- 3 Concomitant with rheumatism, no diarrhoea or sweating existed

- 4 Urine—presented larger amount of chlorides, sulphates, and urea, and in some cases markedly albuminous and discharged fatty and hyaline casts (detected under the microscope)
- 5 Skin harsh and dry, general formication and burning sensation over the shoulders were often complained of
- 6, Fever was never high, but low febrile state was continually present
- 7 In some case suppuration occurred
- 8 Pus discharged from suppurating joints was creamy, sanious, foetid and excited violent irritation and conjunctivitis when dropped into the eyes of a cat

Treatment—Usual tonic and antiphthisical remedies, employed, with good food and plenty of air

Remarks—Out of 12 treated, 11 cases died, and 1 was discharged relieved, and his whereabouts are not known

III—MALARIAL RHEUMATISM

Ushered in insidiously in double tertian and old-standing tertian fever cases, with pain and swelling of the joints

Observations—

- 1 Pain only increased with paroxysms of fever
- 2 Pain was dull aching, but never sharp or acute
- 3 Persons of all ages and both sexes equally suffered
- 4 Urine was pale, smoky sp gr 1030 to 1035, usually loaded with uric acid, and urates
- 5 During the interval pain diminished
- 6 Debrueh was followed by prolonged convalescence
- 7 Those exposed to mosquito predations suffered badly, and swelling and pain were more marked
- 8 Insomnia marked sleep often disturbed by fearful nightmares
- 9 Patients stirred out, but were never confined to bed

Treatment—Antiperiodic, bitters with mineral acid and good food given, locally hot fomentations of chamomile and poppy heads was found useful. Quinine and morphia alone did much good

Remarks—Quinine and other anti-malarial measures cured the cases, out of 242 cases, duration in a marked degree was present in 13 cases, and of these 10 ended fatally, the rest recovered, the blood showed tertian crescents (in all cases) under the microscope

IV—METASTATIC RHEUMATISM

This is the proper form of rheumatism, set in after exposure to cold and wet, and in these cases all forms of symptoms and pathology were present including acute, sub-acute, chronic, arthritic forms and with synovitis were present

Observations—

- 1 Fever and pain were more marked in phlegmatic temperament persons
- 2 Exacerbation of pain regularly occurred during the hours 4 to 6 A.M. and 6 to 12 P.M. following the two maximum and minimum diurnal barometric variations
- 3 Indigestion with acidity present in 92 cases
- 4 Fever generally remitted with profuse acid perspirations
- 5 Pericardium affected in 7 cases out of 10, forming a complication producing a prolonged convalescence
- 6 Urine in 16 cases (observed), sp gr 1020–1025, contained larger percentage of fatty derivatives
- 7 Sudden exposure to cold after worry and wet with sweating produced the disease

- 8 Men and women were more prone to it than children of either sexes
- 9 Sedentary habits predisposed to it more than active workers
- 10 Paupers easily took the disease, but suffered less
- 11 Intemperance increased insomnia and restlessness

Treatment—Anti-rheumatic and alteratives were given with good food, hot fomentations and liniments used externally, keeping in the room filled with steam of water impregnated with benzoin proved very much soothing and relieved insomnia

Remarks—Out of 103 cases 87 were women, and of these 71 were primiparae

V—DYSPEPTIC RHEUMATISM

It is due to over-feeding, much use of acid fruits, such as grapes, peaches, pears, plums, apples, melons and cucumbers, and free indulgence in whiskey and stout produced the disease beginning with compression at the pit of the stomach, constipation headache, pain in the joints, legs, general malaise, and subsequently severe pain in the larger joints confined the patient to his bed

Observations—

- 1 Vomiting by itself or induced, produced good effect, relieved the stomach and subsequently lessened the pain of the joints
- 2 Bowels if cleared out by saline purgatives gave instantaneous relief
- 3 Joints were painful, but not affected structurally
- 4 Urine was acid, and deposited lithates in larger proportions

Treatment—Saline purgatives, salt baths, emetics light food, maintaining under feeding for a few days effected cures

Remarks—All the 28 cases were cured without much attention and difficulty. Sulphate of soda and phosphate of soda, with cinnamon water, proved very useful in my hands

VI—GONORRHOEAL RHEUMATISM

51 cases presented for treatment, of these 9 women and 42 men, all chronic cases of gonorrhoea

Observations—

- 1 Slowly set in in 5 cases it took 2 years to develop the disease in
- 2 In men, chordee in 5, saddleback stricture in 13, and spasmodic stricture in 3 were present
- 3 Pain and swelling affected knees only
- 4 Pain acute and gnawing
- 5 No fever, but sometimes slight feverishness was present
- 6 In women severe lumbago existed and urethrorrhoea present in all
- 7 In all cases burning sensation was complained in the palms and soles

Treatment—Sulphur fumes and hot air baths, saline purgatives anti-gonorrhoeal remedies plus the necessary surgical interference proved useful

Remarks—Ethyle iodide cautiously used proved useful

VII—SEASONAL RHEUMATISM

139 cases treated, these were due to sudden exposure to wet and cold, during windy winter months of December, January and February when the temperature fluctuated between 46°F to 67°F. Consisted of severe muscular pain and tenderness of the larger joints (knees and elbows), attended with feverishness (never going up than 101.4°), headache, constipation and acidity

Observations—

- 1 All cases presented symptoms of mild sub-acute form of general rheumatism

- 2 Complication existed
- 3 Convalescence was of very short duration
- 4 All cases yielded to simple remedies
- 5 Urine suppurative, sp gr 1015-1025, less markedly acid
- 6 Children were mostly affected, and women more than men

Treatment—Closed quarters, warm rooms, hot fomentations, simple diaphoretics, stimulants and tonics with good food effected cure

VIII—PUERPERAL RHEUMATISM

11 cases treated, 3 in cases of retained placenta (adhesion), 4 in strumous constitution after childbirth, 1 with secondary syphilis, 3 due to exposure to wet and cold during parturition in multiparae, and ill fed persons

Observations—

- 1 All the joints (great or small) were equally affected with smarting pain
- 2 Special exacerbation and interval of painless-ness noted, hours between 2 to 6 A.M. was most painful, and that between 9 to 12 P.M. more soothing
- 3 No fever in marked degree noted, but low feverishness was present and 99.2 to 99.8 maintained throughout the entire course
- 4 In one case, abscess formed in the left knee joint
- 5 Lochial discharges increased and, very large, foetid and exhausting

Treatment—Good food, and hygiene rapidly hastened recovery; tonics and alterative diaphoretics effected cures

Remarks—No puerperae were affected

IX—SEPTIC RHEUMATISM

30 cases treated, 2 occurred in males after lateral lithotomy, 1 after a severe shaking of the body by fall from a camel, 3 due to gangrene (set up by camel bites) of arm and legs, and 24 cases due to indolent blood poisoning. All cases presented chronic arthritic symptoms, and in all of these abscess formed in the elbow, and knee joints (specially)

Observations—

- 1 Joints were aspirated, and thick sanious pus evacuated
- 2 Lymphatic glands in the vicinity were swollen, and in some suppurated
- 3 Patients were generally strumous, syphilitic, and leprous
- 4 Wonderful to note, though many were married, they had no issue whatever
- 5 Of 30 cases, 1 presented in a child 10 years of age, 6 in women (abandoned characters), 23 in men of all states of life, but generally base living

Treatment—Tonics and alteratives did much good. But the treatment was only palliative and not curative

Remarks—Two thirds of the cases treated succumbed to embolism, phlebitis, septic fever, and failure of heart caused by prolonged drains on the general system produced often by evacuation and discharge of larger quantity of pus

X—VARICOSE RHEUMATISM

12 cases treated, all in wandering nomads (Bengalis), 3 in women, and 9 in men. These by profession had to load heavy baggage on oxen, and to put to strain the veins of the lower extremities

Observations—

- 1 No fever present
- 2 Dull aching pain existed (knee joints only affected)

- 3 No swelling present, but inability to stir out existed
- 4 The limbs affected with varicose veins were only affected

Treatment—Were amenable to treatment of varicose veins, and alteratives with good nourishing food

Remarks—As a matter of reference I put in such cases here, they really deserved a place among the vein diseases

XI—TRAUMATIC RHEUMATISM

4 cases treated, all men and medico legal cases, result of affection of the trophic nerves of the joint (knee joint) struck with lathes (non ringed staves)

Observations—

- 1 No complications existed or manifested
- 2 Pain was of a gnawing character
- 3 Incapability of moving the joint was markedly great
- 4 Composition of the joint (knee) was not affected
- 5 Frightful delirium noted in two cases

Treatment—Amended under simple remedies, hot fomentations, cooling lotions, saline purges, and alterative tonics and good food

Remarks—Nervous irritability was present, all the patients were troubled with fearful nightmares

XII—SUPPURATIVE RHEUMATISM

16 cases treated, started as inflammation of the joint (knee), and subsequently forming abscess in the joint

Observations—

- 1 All attended with fever (102°F to 105°F)
- 2 Pain was acute and intolerable
- 3 Matter found its way to intermuscular septa, subcutaneous spaces, and permeated all soft parts round the affected joints
- 4 Patients were emaciated, and sinking

Treatment—Any treatment proved useless, except in two cases, where local measures, early adopted, effected cure

Remarks—I lost all but 2, and in this amputation at the knee (Gardner's) was performed. These were not very advanced cases, and made good recovery with suitable stump for a wooden pin

XIII—DIPLOMANIAC RHEUMATISM

13 cases treated, these patients were all Rajpoots, men, drunkards, and they manifested the symptoms after a severe debauch

Observations—

- 1 Liver was affected
- 2 Liver tenderness existed
- 3 No swelling of the joints present
- 4 Dull aching pain returned after a full meal
- 5 Marked disgust existed for fatty food
- 6 Urine presented absence of bile pigments, though jaundice was present

Treatment—No remedies proved useful

Remarks—All were cases of advanced disease of the liver, three ended fatally, and they had chronic inflammation (cirrhosis) and multiple abscesses existed. At the post mortem inspection in one case abscesses noted to point at the longitudinal fissure, Glisson's capsule was adherent, generally the liver substance presented mosaic appearance (nutmeg liver) with matter formed in the lobus spigelii and lobus quadratus

XIV—ALBUMINURIC RHEUMATISM

21 cases came under observation, these were Mussalman cattle dealers, living out of doors in the jungles, grazing their cattle and were much exposed to the inclemencies of the weather. All cases were men, and down with pain in the joints, large and small, and all affected with chronic Bright's disease

Observations —

- 1 Urine scanty, sp gr 1025, albuminous, no sugar or fatty matters
- 2 Pain in the joints (loins, hips) often very severe
- 3 Eyesight was affected, field of vision limited, the peculiar opacity in the retina seen by the ophthalmoscope
- 4 Symptoms of pericarditis existed
- 5 Heart affected, the systolic sound muffled by sharp shrilling presystolic sound
- 6 Dropsy or oedema present at the foot, eyelids and abdomen

Treatment — All tended to palliate, none had any good action whatever

Remarks — I lost all cases. One case I examined after demise and found kidneys suppurating, the pelvis full of pus, and the cortex shrivelled up. The flaps of the mitral valve thickened, pericardium adherent and thickened. Bruin substance congested retinal layer of the eyeball, shrivelled, optic tracts atrophied.

XV — CARDIAC RHEUMATISM

10 cases. Confirmed cases of mitral incompetency attended with dropsy, and swelling of the knee joint.

Observations —

- 1 Mitral regurgitation listened
- 2 Pain had distinct interval of remission
- 3 Apnoea was more marked
- 4 Breathing was very peculiar Cheyne Stokes
- 5 Urine highly albuminous, sp gr 1025—1030
- 6 Ascites existed, abdomen, feet, eyelids and scrotum affected

Treatment — Not successful

Remarks — Attended fatally, under the microscope the urine presented hyaline casts, with a few oil and fatty globules

XVI — DOUBTFUL CASES OF RHEUMATISM

Sixty-four cases presented for treatment, principally noted in sudden change of climate and diet

Observations —

- 1 Signs were often not more manifest
- 2 Knee joints were principally affected, painful and swollen
- 3 Indigestion markedly present
- 4 Bowels were irregular, and constipated
- 5 In six cases, vomited matter contained the fungus *Sarsina*
- 6 Complications did not exist

Treatment — Correction of diet, good food, healthy, out-of-door exercise, good hygienic surroundings were sufficient agents to effect cures

Remarks — A cursory observer might overlook this for dyspepsia only

XVI — SHAM RHEUMATISM OR MALINGLINC

I treated 31 cases, these were either medico legal cases, or in the peons and jemadars of the Northern Indir Salt Revenue Department, that feigned to make cures, or to avoid duty

- 1 In all cases, pre possession existed
- 2 Swelling absent, bitterest pain complained of
- 3 Any touch was supposed to give intolerable pain
- 4 No sleep, patient seen brooding over his sickness
- 5 Any severe methods when suggested, the patient tried his best to avoid them

Treatment — Restrain. Continued fuzidization and strong bitter solutions cured the assumed ailment very soon

Remarks — This form needed no place, but as such cases do come under observation, hence as a matter of reference I have put them in

General treatment — The lines of treatment I adopted with any benefit are —

I Local measures — These are —

Hot fomentations, vapour baths saturated with belladonna, opium, or hyoscyamus, hot poultices, hypodermic injections of morphia, morphia et atropina, pilocarpine nitras, painting the part with tincture of iodine, juices of stramonium and castor oil, oil of malkangni (celastias pinniculatus), oil of citronelle (poa schœnanthus), oil of brboomia (anthemis nobilis), fuzidization and massage

II Internally are —

Alteratives — Soda salicylas, potassii arsenias ferri arsenias, soda cicodylas, ethyle iodide, ammonii chloridum, guaiacum, sarsaparilla comite, belladonna, Gelsemium and turpentine

Salines — Sulphate of soda, magnesia, phosphate of soda, hypophosphite of soda, potassii bicarbonas, potassii acetras, potassii nitras, and acid tartrate of soda or potash

Tonics — Mush, glycerophosphate of lime soda and iron, sulphuric acid, salicine, quinine, chinetta, and quassia

III Of the indigenous stock I tried the following under various forms —

Vachhabh (aconitum ferox), mastagi (diphine mezercon), asgard (physalis somnifera), gulan cha (tinospora cordifolia), aspard (pegrum harmala), malkangni (celastias pinniculatus), parpati (fumaria officinalis), mudra, white (calotropis gigantea), kmeri (nerium odorum), kaldra (thevetia nerifolia), Seuhni (Euphorbia triculi), nigundi (sippa purpurea), apsanteen (utemisa indica), nist (Ipomea turpithum), vakas (justicia viscosa), rusa (simaruba exalsa), swanijra (moringa pterygosperma), moondee (sphaeranthus molle)

IV Of the Kabutaji remedies locally महाभैरव तैल, and गोपाल तैल, महासास घृत, नारायण तैल, proved efficacious in my hands. Of the internal remedies used are —

सोमवल्किषाय, महाभैरवसायण, गुलचादिकाय, चव्यग्रास, ग्रन्थगन्धारसायण, मकरध्वज, हिंवाष्टक चूर्ण, सुतभस्म, मृगाक, चन्द्रोदयरस, जारित अक्ष, कान्तिसार लोहभस्म, हरितालभस्म, ताम्रेश्वर, रुपरस, क्रागलाद्य घृत ॥

General Remarks — The classification entered into here is my own and arbitrary, as the several cases presented for treatment. As I put before the profession all I experienced, and I need not plead excuses if my list was the most exhaustive, however, I am sure others with large practice, and in situations pre eminently notorious for rheumatism, will come forward with their experiences to corroborate my statements. The records of Pichbadia and Bhatri Salt dispensaries and Bhatri Raj dispensary (1891 to 1906) are replete with rheumatism business, and will repay one's perusal of the same. Certainly I worked on the practical side of the subject, and on the scientific sides, hence I could not handle the blood and the microscope — or chemicals and the different secretions of the body, what involves minute study of the subject and great and patient labour and perseverance to arrive at scientific and precise conclusions. I hope some one will take up and work out the problem so tersely touched upon by me

A Mirror of Hospital Practice.

UNUSUAL CASES OF OVARIAN CYST

By N. J. WANLESS, M.D.,

Miraj

AN ordinary ovariectomy is one of the simplest operations in abdominal surgery, and few operations on the female pelvic organs yield more satisfactory results.

In India one is apt to meet with unusually large cysts, the treatment of which has been so long delayed that complications have arisen contra-indicating radical treatment, or distension of the abdomen by the tumour has progressed to such an extent that one hesitates to do a radical operation fearing the untoward effect of the sudden release of intra-abdominal pressure. Then again the breadth of the pedicle, the involvement of the uterus, the presence of adhesions, and the development of a fibrous, villous, or other growth in connection with the tumour, and discoverable only at the time of operation, inter-ligamentary development of the cyst, or the complication of inflammation and suppuration are all conditions which make the unusual operation for ovarian cyst more or less of a serious undertaking.

Most of these complications are illustrated in the five cases herewith reported, and this is one's excuse in here recording them. The cases are selected from a total of 24 cases treated in the Miraj hospital since 1884.

While the operative method of dealing with the tumours varied somewhat in different cases, preparation of the patient and the closure of the abdomen was carried out in all the cases practically as follows—

On admission the patient is given a warm bath, clean clothing put on, and the patient put to bed. Light diet is prescribed for the first 24 hours and liquid in the second. On the night of the day of admission 4 grains of calomel are given followed by 2 to 4 drachms of magnesium sulphate in the morning.

On the day after admission the patient is taken to the operating room, the abdomen and genitals scrubbed with soap and hot water, a soft soap poultice placed over the abdomen for two hours, the abdomen again re-scrubbed and a wet towel wrung out of 1 in 1,000 bichloride solution placed over the abdomen and pubes and bandaged in place, remaining there until the time of operation, next day, usually 9 A.M.

The patient having been partly anesthetized, and the Surgeon and his assistants having prepared their hands for operation, the preparation of the abdomen is completed on the table. The dressing and towel having been removed by the assistant, the attending nurse re-scrubs the abdomen again with soap and water, and the Surgeon briskly scrubs it successively with towels wrung out of bichloride solution 1 in 500 of alcohol and water in equal parts, formalde-

hyde solution 1 in 500 and finally sterile salt solution. The abdomen is covered with dry sterile towels with the exception of a small portion in which the incision is to be made. Over all a piece of gauze wrung out of bichloride solution 1 in 1,000 thrown and hole cut for the incision. The tumour having been removed, the wound is closed in layers. A running stitch of No. 2 catgut is used for the peritoneum, the fascia with a mattress suture of No. 4 chromized catgut placed about $\frac{1}{2}$ of an inch apart and between each a fine celluloid thread, or silk stitch is placed. If the abdominal wall is unusually thick an extra row of sutures is placed in the superficial fascia. The skin is closed with interrupted sutures of silkworm gut.

If the operation has been of unusual length two to four pints of hot normal salt solution is poured into the abdomen just before the peritoneal suture is tied.

This method of closing the abdomen is the one followed in all of the abdominal work in the Miraj hospital excepting in cases of great urgency when through and through sutures of silkworm gut are used. We have found the fine closure of the abdominal wall eminently satisfactory. The silk used is quite fine twist (No. 3 or 4). It is non-irritating and is eventually absorbed. The strain is taken off the silk during healing by the heavier catgut, and after the absorption of the latter it serves to strengthen the union of the fascia (the most important structure anatomically from the view point of hernia prevention) until long after the catgut has been absorbed. We have for several years employed the same plan of suturing in the Bassini operation for hernia and with equal satisfaction.

Case I. Existence of tumour for ten years during which time it had to be tapped every six months, twenty times in all. Radical operation. Recovery. Register number 2242.

Admitted 26th November 1901. Jayabai Bapu, age 50, Maratha, residence Kagal, 45 miles from Miraj. Multipara. Menopause several years ago.

Emaciation quite marked, ovarian pains, general health fair, heart and lungs normal, examination of urine negative.

Has had distension of abdomen for 20 years, has been tapped every six months during this time, in all twenty times in the Kolhapur hospital, last tapping three months ago.

Abdomen moderately distended, moveable tumour with fluid contents easily made out. Large number of scars below umbilicus from trocar punctures. Prepared for radical operation.

November 27th Operation.—Narcosis begun with chloroform 30, followed by ether 30. Time 50 minutes. 4-inch infra-umbilical median incision, 4 inches increased subsequently to 6. Opening abdomen small incysted collection of fluid found between cyst wall and peritoneum, adhesions extensive, extending from 3 inches

below umbilicus to 6 inches above and laterally, in all over an area measuring about 8 by 10 inches. Cyst wall greatly thickened at site of previous punctures. Adhesions separated with some difficulty by fingers and scissors. After tapping tumour and emptying it of 12 pounds of amber-colored oily fluid, delivery of sac and sectional ligation of pedicle which was broad and springing from right broad ligament and corner of uterus. Uterine attachments greatly stretched. The organ could be brought outside the abdominal wound without difficulty. It was not removed. The raw surface on the parietal peritoneum from which adhesions were separated was covered by stitching omentum over it. The wound was closed as described. Reaction was prompt from the operation. Convalescence was protracted. She was kept in the hospital for eleven weeks after the wound had closed and was discharged "cured" and in good general health on the 92nd day. She of her own accord having remained in the hospital much longer than was really necessary.

CASE II Interligamentous Ovarian Cyst
Treated by partial excision of sac, suture to abdominal incision and packing. Recovery.

Register number 414. Admitted 24th Feb 1897. Kamila Bhuma, aged 24, Marattha, unmarried Temple woman, residence Murj.

Patient in good general health, denies syphilis or gonorrhoea. Never was pregnant. Menstruation regular, scanty, last two years. Has had attacks of severe abdominal pain twice a year during the past two years, the pain was confined to lower abdomen and unattended by nausea or vomiting. First noticed swelling, the size of a small fist, in right iliac region two weeks prior to admission, she says it appeared after she had an attack of pain and for the relief of which the thighs were strongly flexed on the abdomen. Has menstruated once painlessly since the swelling appeared. The swelling has increased rapidly.

Examination shows a tense boggy swelling filling the right iliac fossa extending into the pelvis upward as far as the umbilicus and one inch to the left of the median line. Per vaginum the cervix is pushed up and to the left is a large soft painful swelling, fills the cul de sac and region of the left broad ligament and is continuous with the swelling. Above the uterine artery can be very distinctly felt in the lower surface of the mass. The uterus is small, and there is a slight white of egg discharge from the cervix, which is otherwise normal. On admission the bowels were cleared by calomel and jalap, and the following day under chloroform narcosis, the swelling was aspirated per vaginum and ovarian fluid drawn. A trochar was carried into the swelling alongside the needle, and three ounces of additional fluid removed when the trochar became clogged. The aspiration puncture was closed by a single stitch of catgut. The suprapubic swelling was

slightly reduced by the aspiration, but in two days regained its former size. Preparation was now made for abdominal section.

Operation, March 27th—Chloroform narcosis 35v. Time one hour and a half. Median 3 inches infra-umbilical median incision subsequently increased to 6 inches. Opening the abdomen a cyst presented and was found to fill the right side of pelvis and right iliac fossa. It was found to be interligamentary. The presenting portion of the sac was grasped by a polypus forceps, drawn into the abdominal incision and aspirated, about a pint of cyst fluid escaping. The cyst was now elevated. The superficial adhesions were separated and the wall elevated about 3 inches above the abdomen and incised, and the contents expressed and mopped out. Some of the fluid escaped into the abdominal cavity which was mopped out and irrigated with sterile water. The portion of the cyst wall above the abdominal wall was cut off flush, the sac stitched to the peritoneum, and the abdominal wound closed up to the sac, except where a glass drain was carried with the pelvis above and outside the cyst cavity, as there was considerable oozing from the separated adhesions. The cyst cavity was packed loosely with iodoform gauze and a wick was carried to the bottom of the glass tube. Two provisional sutures were placed at the site of the glass tube and were tied on the second day when the glass tube was removed. The glass tube was syphoned out on the evening of the operation and twice the following day when it was dispensed with.

The gauze pack in the cyst was partly removed on the second day and gradually each day until the sixth day when it was entirely removed and the cavity irrigated with Thiersch's solution and lightly re-packed. The packing was removed every second day until the 25th day.

The patient left the hospital 41 days after the operation, a small sinus persisting, but relieved of most of her pain and feeling generally well. She reported later in the out-door dispensary, the sinus finally closed and relief of pain seemed complete.

CASE III—Fibro cyst of ovary with broad pedicle attended with monthly hemorrhages
Operation, recovery. Register number 2974. Admitted 24th November 1903.

History and description—Sativabai Shedappa, aged 43, Jain, married. Residence, Datward, 12 miles from Murj, youngest child, eight years old, Menopause past. Fair general health. First noticed tumour in hypogastrium two years prior to admission, and has increased slowly and steadily ever since. Suffers from flooding from uterus, twelve days each month attended with considerable pain and is constipated. Examination shows distension of abdomen to size of six months' gestation. The tumour has a doughy feel over the upper two-thirds and in the hypogastrium is hard and continuous with softer portion above.

Bimanual examination shows the pelvis to be blocked by a tumour which appears continuous with body of the uterus. The cervix is large and open, a sound passes three inches. There is no discharge. Provisional diagnosis, fibromyoma of uterus made.

Operation, 26th November, 1902—After usual preparation three inches median infra-umbilical incision. Cyst tapped and four pints of dark thin fluid withdrawn. The remaining solid portion (weighing four pounds) was delivered. The pedicle involved right broad ligament and cornu of uterus. Ligated in three sections with celluloid thread and dropped. Some of the fluid which had escaped into the abdomen was sponged out and three pints of salt solution left in the abdomen. Abdomen closed as described without drainage. Convalescence afebrile and uneventful. Stitches removed on tenth day, wound healed per primam. Discharged cured on 20th day. The solid portion of the cyst presented all the gross characteristics of a fibroid tumour of the uterus.

CASE IV—Enormous ovarian cyst, from which seventy pints of fluid were removed by simple tapping. Death on eighth day from suppression of urine and oedema of lungs. Register No 1329. Admitted 17th April 1900.

Satyawa Tipana, aged 45. Residence Shamanwade, 18 miles from Miraj. IV Para, youngest child five years old. In very poor general health, extreme emaciation, marked anaemia. Pulse 120 and of poor volume.

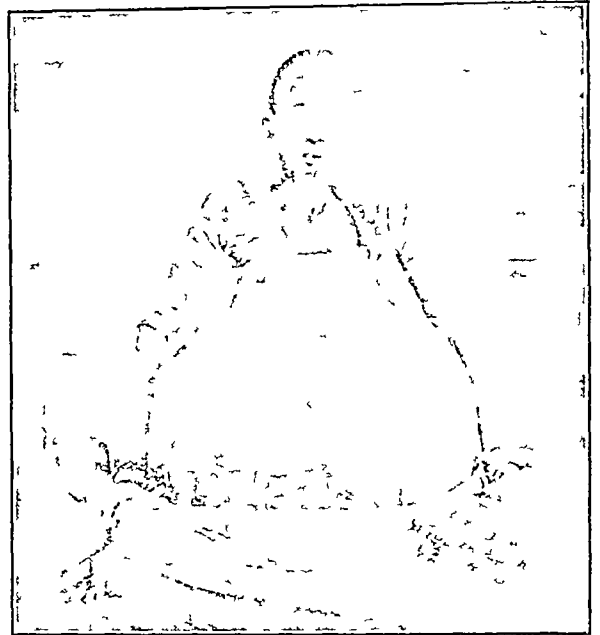
Patient unable to lie down, and squatting presents a general pyramidal appearance and reminds one of a woman under an old-fashioned hoop skirt with the thighs completely hidden under distended abdomen. Marked ovarian facies. First noticed swelling in lower abdomen 12 years ago, which has increased steadily. Two children born since swelling was first noticed. Menopause five years ago.

The ribs and costal arches are flaring and expanded greatly. The abdominal distension is symmetrical and flat all over on percussion. The measurements are, girth at clavicle 35 inches, at nipple line 30 inches and at summit of distension 68 inches. Large veins course over the abdomen and converge at the ensiform cartilage.

Patient continually occupies squatting position, and when sleeping, leans against pillows. Recumbency is impossible. Several persons are required to lift her in order to obey nature's demands.

The urine is scanty, 15 ounces in 24 hours, and contains a small quantity of albumen but no sugar. There is no oedema of the feet or legs. A vaginal examination was not practicable owing to the pendulous condition of the abdomen, which hung between and over the thighs, the thighs being abducted in a position almost at 90 degrees to the pelvis. Owing to the patient's poor general condition, removal of the cyst was considered inadvisable.

The patient was carried into the operating room and put on the table in a sitting position and the cyst tapped. 70 pints of ovarian fluid of a brownish amber color and weighing 140 pounds. After the tapping, the loose abdominal wall floated over the side of the patient, and it was with great difficulty that a binder was applied so as to retain it. It was, however, accomplished by use of a many tailed bandage, and a large quantity of cotton and firm pressure kept up from the nipples to the pubes. There was some dyspnoea but no shock. The patient did very well for six days when she developed oedema of the lungs and died on the 8th day after the tapping, with suppressed urine.



CASE V—Enormous ovarian cyst, containing 105 pounds of fluid. Exploratory incision and emptying of sac. Death from shock.

Register No 1573. Admitted 25th September, 1900. Dhondubai Rehman, Mohammedan, age 45. Residence Islampur, 25 miles from Miraj. Married, multipara, mother of "several" children. Menstruation regular, until six years ago, and continued for one year after first noticing abdomen steadily increasing in size for seven years. Enormous symmetrical distension of abdomen and large veins coursing over it. Measurement from zephoid cartilage to pubes 32 inches, girth at most prominent part of tumour 62 inches. Percussion is flat all over, except in the right flank, where there is some tympany.

The feet are not swollen. The thighs are separated and the patient is unable to occupy any but the sitting and slightly reclining posture, the latter by aid of cushions.

The heart apex is in the fourth interspace and the lungs are greatly compressed. There is some dyspnoea.

The urine 24 ounces in 24 hours is normal
Usual perspiration



Operation, April 28th—The abdomen was opened, but adhesions between the parietes and over lungs were found so dense and universal that after a moderate attempt to separate them, the cyst was simply evacuated and the wall stitched to the abdominal incision. The fluid contained a large number of large fibrinated slots and there were large fleshy masses in the loins and pelvis, weighing approximately six to eight pounds each.

The patient died from shock about twelve hours after the operation.

THE OPERATION OF TRANSPLANTATION OF THE CORNEA

By E. J. O'MEARA, I.R.C.S., D.P.H. (Cumb.),

Captain, I.M.S.,

Civil Surgeon, Muzapuri

As such a very large proportion of the population in this country suffer from opacities of the cornea in varying degrees, and as a considerable number are thereby rendered totally blind, I have for some time been working out and practising details of the operation of transplantation of the cornea.

I have not as yet operated in cases of slight opacity, but only those in which the patient was unable to perceive light.

Operation—One or both eyes having been prepared as for a cataract operation, I estimate the thickness of the leucomatous cornea by careful inspection and transfix with a cataract knife at distances from the sclerotic margin varying with the thickness of the leucoma, having transfixed the knife is carried with a gentle sawing movement to the upper margin of the cornea, the flap thus raised is seized with

forceps and divided with the knife at its lower attachment, care being taken that this division is perfectly even and level with the rest of the section.

Inspection of the cornea is now almost certain to show one or more thin semi-transparent, possibly slightly bulging areas, these are very carefully avoided, and section after section, each thinner than the last, is cut by transfixion from the remaining opaque cornea, after each section the perception of light is tested.

Successive sections should be cut until the danger of opening the anterior chamber with escape of aqueous humour is imminent, the patient may now possibly be able to count fingers, but this is not essential, only a good perception of light being required.

In many cases the leucomatous cornea and iris are blended into one cicatricial mass, and the case at first sight appears hopeless, in others, again, a portion of iris clear and not adherent is seen, which will allow of a secondary operation for iridectomy.

If, during any stage of the operation, the anterior chamber has been opened, and even the smallest point of aqueous humour escapes, the operation must at once be abandoned for from three to five days, after which the cut surface is freshened up at the edges and the operation continued.

When the sections of the patient's cornea have very nearly been completed, an assistant in an adjoining room chloroforms a pariah dog, if the chloroform is given very rapidly and steadily, the dog usually dies in a minute or a minute and a half without a single struggle, but if given slowly and not pressed at first, it may take a very long time to cause death, immediately the dog is dead, the very strong fibrous ring round the orbit is freely divided with a scalpel and the conjunctival sac opened up at both canthi, this is necessary as the dog's eye is deeply set.

Two or four sutures of fine silk are now passed through the dog's cornea at equal distances round the margin, formerly I passed the sutures either after division of the cornea from the rest of the eye, or after it had been applied to the patient's eye, both of which are difficult, and cause much undesirable manipulation of the cornea. The entire cornea is now removed by cutting round at the sclerotic margin, with a cataract knife, scissors should be avoided, this division is made nearly horizontal, giving the margin of the cornea as large a base as possible by which to adhere.

All bleeding points of the leucoma having been most carefully stopped with adrenalin solution, and the small blood dots removed with salt solution, before the transplanted cornea is placed in position.

The dog's cornea with the sutures *in situ* is now either first washed in salt solution or directly placed on the patient's eye. The lower

end of each suture is now threaded and passed through the ocular conjunctiva, and when all are in position, they are tied, the greatest care being taken that there is not the least tension.

As regards this part of the operation I have used (1) one, two, three and four sutures, (2) no sutures at all, simply placing the transplanted cornea on the patient's eye and applying the dressing, and (3) placing the cornea on the eye without sutures, but putting a single suture through the upper and lower lid and drawing them together for the first two or three days.

Union of the transplanted cornea has been obtained by all of these methods, but I am in favour of either two sutures of the cornea, or a suture of the lids.

The lids are not dusted with iodoform, but simply a cataract pad and bandage applied in the usual way.

After-treatment—Irrigation daily with salt solution after the second day.

The transplanted cornea heals in a striking way, the dog's cornea being larger than that of the patient's, the central part is, so to speak, punched out, the margins coming away as a complete ring in the majority of cases.

The transplanted cornea may become opaque from—

1 Excessive manipulation, or perhaps also over immersion in salt solution, in from two to five days.

2 From contact with aqueous humour, in from one to three weeks. If the transplanted cornea does not unite at once, hope should not be given up, as in one case a completely detached cornea without sutures united seven days after the operation and remained clear.

Other operations—

1 It has been recommended that a portion of the leucoma should be removed with a trephine, but in this case there is greater danger of opening the anterior chamber with escape of aqueous humour, as the operator cannot possibly judge the varying thickness of the opaque cornea in any particular spot, while after the first flap is raised by transfixion, all the thin and dangerous spots are at once apparent and can be avoided. Moreover, the smaller the area of cornea transplanted in my experiments, the greater was the liability to subsequent opacity. In the above operation the transplanted cornea is considerably larger than the area of the patient's eye to be covered, the central portion is, so to speak, punched out in healing, and the margins which have been of necessity damaged by manipulation are thrown off.

2 Weber states that the opacity of the transplanted flap is due to a solution in the continuity of its posterior epithelium, whereby the aqueous humour gains entrance to the substance of the cornea, but from my experiments, I conclude that contact of the patient's aqueous humour with the transplanted flap will cause opacity under any circumstances without injury

to the posterior epithelium, as I found the transplanted cornea became opaque, when only a small point of aqueous humour touched its centre, which had been carefully guarded against injury. Aqueous humour coming in contact with the margins of the transplanted cornea, which have been injured by manipulation during removal and placing on the patient's eye, causes more rapid and intense opacity.

3 Von Hippel describes cases in which he excised the leucoma only as deep as the posterior elastic lamina, dissecting off the superficial layers, and leaving this layer and the posterior epithelium intact, this may be possible in cases which have been under previous care and treatment, but to attempt an operation of such precision on the hard cicatricial leucomas seen in Indian hospitals is beyond possibility.

Results—M, age 26, came into hospital absolutely blind, without the least perception of light, on leaving hospital after transplantation of the cornea in both eyes, she had excellent perception of light, and was able to count fingers in a good light. Six months after operation she was able to move about the house and out of doors and attend the calls of nature without help. Results such as these, it may be argued, can hardly be regarded as very satisfactory, and this would be so with a highly civilized people, but to the majority of leucomatous blind in this country who simply require to be able to move about their villages and attend the calls of nature without assistance, I contend that the gain is considerable, and at any rate worth a long and fair trial of the operation.

Another point worth notice is the improvement in appearance of the eye, and I have lately been asked to operate for this reason alone, among the higher classes.

ANEURISM OF THE COMMON CAROTID ARTERY

BY O. ST. J. MOSES, M.D., F.R.C.S. (Ed.)

Civil Surgeon, Dhubri

On June 17th, 1906, a man, named Diem Mandal, came to the out-patient's department of the Krishnagan Hospital, in the district of Nadia, Bengal. He was 65 years of age, by caste a Mahomedan, by occupation a cultivator, resident in the village of Jaipuri. He complained of a swelling on the left side of his neck which, he said, caused him much inconvenience and pain, especially on pressure, and whenever he turned his head from side to side. He observed the swelling first about three months ago, but was unable to say for certain, that it had not commenced earlier. The general state of his health was, according to him, good, and there was no history of specific or other disease. He complained of no constitutional or other symptoms, of no difficulty in breathing or in swallowing, and he said that

the reason for his coming to hospital for advice, was the pain from which he suffered rather than the deformity which the swelling in such a prominent position, occasioned. The general appearance of the patient was good. The man was fairly well nourished. He had that morning come on foot a distance of six miles or so to hospital, to seek advice. On examination the patient was found to have a swelling on the part indicated, over the line of the common carotid artery and on a level with the thyroid cartilage. There was neither history nor sign of injury or wound of the neck. The swelling was about the size and shape of a duck's egg, its skin-covered surface projected considerably beyond the general level of the skin of the neck, and the mass was placed evidently behind the plane of the sterno-mastoid muscle which was pushed forward in front of it. Further, it was movable *en masse* over the structures beneath, while the skin and superficial fascia moved freely over the whole swelling beneath. Pressure elicited pain. The mass pulsed synchronously with the heart's beat, but the expansile character of the pulsations, though present, was by no means very distinct. When the left common carotid artery was compressed on the cardiac side of the swelling, the pulsations lessened, though they did not cease, and the mass did not diminish in size to any appreciable extent, nor did pressure on the distal aspect make the mass more tense or the pulsations more marked. No bruit was audible over the site of the affection. The pulse in the left superficial temporal artery was not diminished, delayed or otherwise altered to any noticeable degree as compared with that in the corresponding artery of the opposite side. The vitality of the parts beyond was in no way affected and there were no signs present of congestion and œdema of the distal parts, or of interference with the cerebral circulation, or of irritation of the cervical sympathetic. The œsophagus was evidently not pressed upon, or, at any rate, not to the extent of deglutition being interfered with, and the larynx though deflected very slightly to the right side of the middle line, was in no way disturbed in its functions. The heart appeared to have undergone a slight compensatory hypertrophy, but was not in any other manner affected, functionally or organically.

The various possible explanations of the swelling having been thoroughly considered, the case was diagnosed as one of fusiform aneurism of the upper part of the common carotid artery, below its point of bifurcation, the patient was admitted to hospital at once, and it was decided to operate on him the following morning.

Operation.—The patient, having been carefully prepared beforehand, was anesthetized by means of chloroform. The operation decided on was that of ligaturing the main vessel on the proximal side and, for doing this, I selected the

high operation or ligature of the vessel above the omo-hyoid. Accordingly, I made the usual incision, about three inches long, in the line of the vessel, with its centre on a level with the cricoid cartilage, going through skin and superficial fascia, including the platysma myoides, and coming upon the deep fascia at the anterior edge of the sterno-mastoid muscle. Owing to the consequent relief of tension in the superficial structures, the sac covered over with deep fascia at once presented itself at the incision along the anterior border of the sterno mastoid, and, stretched over it, was a small vein going across from superior thyroid to internal jugular trunk. This vein was severed between double ligatures and the deep fascia along the inner margin of the muscle was, owing to the bulging of the sac, carefully nicked and then divided on a director with the cutting edge of the knife turned upwards. The sterno-mastoid muscle having next been drawn outwards and the anterior belly of the omo-hyoid found, the artery was felt pulsating in the angle between the two but within its own sheath over which the descendens hypoglossi was identified running downwards. The sheath of the vessel was opened on the inner side and the artery cleared easily enough on that side, but when it came to dealing similarly with the outer side of the vessel, it was found that the partition of deep fascia, which separated carotid artery in the inner compartment from internal jugular vein in the outer, was firmly adherent to the vessel on either side of it at this level. This necessitated clearing the vessel in its sheath at a somewhat lower level and ligaturing it there after passing the aneurism needle from without inwards and making quite certain that the vagus was not included in the ligature. This step made no change in the size of the swelling or in the pulsations. Moreover, the sac remained so stretched out and its wall so thin, that indeed its feel and appearance gave one the impression that it could not possibly stay intact were the slightest accident to occur during the operation or after it. Further, it seemed to me that the collateral circulation was already at work, judging from the continued pulsation in the superficial temporal artery. Why this should have formed, considering that the channel through the artery and sac was not interrupted prior to the operation, I am unable to say. It may have been an anatomical feature in this case that communications naturally existed, say, between twigs of inferior and superior thyroids, or between superior thyroids of opposite sides, or other branches that usually enter into the collateral circulation after a ligature has been applied to the common carotid, or, it may be that, owing to some degree of impediment to the onward flow of blood in the artery due to the presence of the sac in its course, nature had very kindly allowed a collateral circulation to be established

gradually prior to the date of the operation. Be this as it may, I could, in this instance, see no advantage in leaving the sac as it was, and so I determined to lay it freely open after ligaturing the terminal branches of the common carotid as well as the ascending pharyngeal, above the dilated portion I was further influenced in favour of this step, knowing that it would in no way interfere with the collateral circulation, present or to be formed, as there were no collateral branches given off between the seat of lower and upper ligatures. So I followed out the plan I have mentioned and next turned my attention to the internal jugular vein ere I attempted to deal with the sac of the aneurism. What I felt about the vein was that, considering the way in which it adhered to the thinned-out wall of the aneurismal sac, it was conceivable enough that a communication might fairly readily come about between the two vessels and complicate matters very seriously indeed. The advantages to be gained by tying the vein above and below its point of adhesion to the sac of the aneurism, in the circumstances of the case, seemed to outweigh any risks connected with such a procedure, and so I went on to carry out the ligature of the vein in the positions I have indicated, passing the needle in each case from within outwards with the usual precautions as to the vagus nerve. This done, I laid open the sac of the aneurism, washed out some dark-coloured blood and subsequently stuffed the cavity with a strip of a septic gauze, the end of which was kept at the uppermost part of the skin wound. The smaller vessels having been secured, the skin incision was sutured with horse-hair from below upwards for all but three-quarters of an inch of its length at the upper end. There was practically no hæmorrhage during the entire operation. I may mention that very carefully sterilized, stout silk ligature was used for the large vessels and chromicized catgut employed for the smaller twigs. Early in the operation two small veins required severing between double ligatures, and a few arterial twigs, of no surgical importance, needed to be tied, probably coming from the superior thyroid and muscular branches. As was stated before, the descendens hypoglossi and the vagus nerves were carefully avoided from being injured or included in the ligature. A point worthy of note is that the patient did not bear chloroform very well, but with judicious administration of the anæsthetic and the use of all convenient dispatch in carrying out the various steps of the operation, the case was successfully completed. An aseptic pad was placed over the wound in the neck and ordinary dressings were applied.

After-treatment.—The patient was kept at perfect rest flat in bed, without any food at all for the first 12 hours and thereafter was fed on teaspoonfuls of iced milk at intervals. A little restlessness was easily set right by means of a

hypodermic injection of morphine, which further served the useful purpose of slightly depressing the vaso-motor centres and quieting the action of the heart. The pulse was all that could be desired, there was no temperature, no discomfort or pain. After 48 hours I changed the dressings and found the condition of things most satisfactory. There was no complaint of any kind whatsoever made by the patient, and there had not been the slightest difficulty in breathing, speaking or swallowing at any time since the operation. Healing of the skin-wound by first intention had already advanced considerably. The gauze plug was removed and replaced by a fresh one. The patient's chest was carefully percussed and ausculted without any sign of trouble being detected, while every precaution was taken to protect him against chills, so as to avoid all risks of pulmonary complications. From the third day after the operation the dressings were changed daily and each time the healing of the deep wound was found to have progressed further, the plug being shortened to allow of this, and the patient was permitted a more liberal diet. The only discharge consisted of a very small quantity of thin watery serum with a slightly sanious tinge. On the seventh day after the operation (June 25th), the healing had so far taken place, that beyond a sinus, about half an inch in depth, and a superficial linear scar extending downwards from it for about two and-a-half inches, nothing remained to mark the site of the trouble that had existed until a week previously. The patient was able to feed himself, to walk from his bed to the end of the ward and indeed asked to be allowed to go home. On the 26th he said to me he felt a new man since he had been relieved of the pain and the uncomfortable swelling he used to have. When asked, if he intended returning to his usual vocation again on leaving hospital, he answered "without a doubt, for if I could work till the day before I came to hospital when I had so much pain, why should I not be able to work now when I am so much better?"

From the days of Claudius Galen, who was probably the first author to treat of aneurism, the subject concerning this affection of arteries has been much studied, and knowledge regarding its etiology, pathology and treatment has very greatly improved. So far as its etiology and pathology are concerned, the case I have described illustrates only such circumstances as are at the present day universally known to enter into the causation and to be associated with the presence of a fusiform aneurism of a medium-sized artery. Here is the case of a man of advanced years, with an arterial system which has undoubtedly undergone changes of a general degenerative nature, with a power of heart and blood-pressure by no means diminished, and engaged in an occupation of a kind that no doubt frequently called forth heavy strains or irregular intermittent efforts of a

physical nature. So far as these points go and inasmuch as the treatment of aneurism of this vessel has frequently been undertaken and successfully carried out of late, that is, since the days of Syme, there is no occasion to report particularly on this case. But, considering that at best the treatment of the condition by operation is a formidable one, taking into account that the mortality of the ligation of the common carotid artery for aneurism is as yet high, as pointed out by Mr. Johnson Smith, quoting from the tables of M. Lefort, and seeing that the case now described showed certain peculiarities with regard to the anatomical disposition of the parts concerned, I have ventured to think that an account of it and of the special plan adopted in dealing with it, may be of some interest, and therefore worthy of being recounted. Whether under the circumstances mentioned, the distal ligatures in the case of the artery were necessary or, at any rate, advisable or not, whether again the tying of the vein above and below its point of adhesion to the aneurismal sac were essential or desirable, I leave to the judgment of surgeons of greater experience. But so far I am able to say, that the methods I adopted were the outcome of discretion on seeing the state of affairs actually present at the time of the operation, and they seem to have been justified by the resulting of the case in a recovery, unqualified and uncomplicated.

EXTRA-PERITONEAL TRANSPLANTATION OF URETERS INTO THE RECTUM

By T. V. ARMUGAM, M.B. & C.M.

Medical Officer in Charge, Victoria Hospital, Bangalore

On the 11th August 1906, an adult male of 18 years of age, Raghavachari by name, was admitted into Victoria Hospital for complete extroversion of bladder. He was smelling heavily of ammoniacal urine, and on examination was found to have the posterior wall of bladder opening on the surface of the body between the normal situation of the umbilicus (which was absent) and the symphysis pubes which was also absent, the rami of the pubes being $3\frac{1}{2}$ inches apart. The mucous membrane of the wall of the bladder was thickened and inclined to bleed in parts. There was a ring of ulceration and induration all round the exposed surface of the bladder. The ureters were found opening at the lower part of the exposed mucous membrane on either side of the median line, each on the summit of a papilla, and urine was observed to dribble from the summits of the papillae at intervals of 15 to 20 seconds, but not simultaneously from both.

Operation—On the 20th of August 1906, patient having been prepared the previous day, was anaesthetized with chloroform, the external sphincter of the rectum was dilated with fingers, and a medium sized sterilized sponge

with two feet of sterilized tape attached to it was introduced into the rectum as high as possible to prevent the escape of faecal matter. A sterilized Jacques catheter No. 5 with its eye cut out was introduced into the right ureter to a distance of two inches and fixed to the papilla with a silk suture. With a pair of blunt-pointed scissors the mucous membrane all round the papilla was released, and the ureter was then released to a distance of two inches. The left ureter was similarly dealt with, taking care not to open the peritoneal cavity. The reflexion of the peritoneum was found to be unusually low. The mucous membrane of the bladder was cautiously dissected out. The rectum having been raised by an assistant with his fingers introduced into it, a pair of long dressing forceps was introduced high into the rectum and made to press on the point where it was decided to open the rectum from above. A small opening sufficient to admit No. 5 Jacques catheter was made in the rectum on its right side, and a similar opening was made on its left side.

(In selecting sites for these openings, the precautions mentioned by Mr. Peters, of Toronto, *re*, to select a point as high as possible so as not to exert any traction on the ureters, was particularly observed.) Through the openings made in the rectum the Jacques catheters were gently drawn into the openings until they brought the ureters into which they were sutured, and then the ureters and the catheters were drawn out of the rectum and the papillae made to project a little (quarter of an inch) beyond the sphincter.

The surface of the bladder from which the mucous membrane was dissected out was packed with antiseptic gauze, and the sponge in the rectum was removed and the patient put to bed. The catheter from the right ureter was passed out on the fifth day and the one from the left on the seventh day. Up to the 34th day of operation the patient was having one faecal motion and passing urine per anum on an average five times in 24 hours and with a little dribbling of urine from his rectum during sleeping hours. From the 35th day up to the date of discharge from hospital, *re*, the 58th day after operation, patient was having one faecal motion during the day and passing urine per anum on an average four times between 6 A.M. and 9 P.M., the waking hours. The dribbling of urine from the rectum during sleep stopped on the 34th day of operation, and from that day up to the day of discharge from the hospital, *re* the 58th day after operation, patient was able to retain urine in the rectum from 9 P.M., until about 5-30 A.M. or 6 A.M., and was passing urine per rectum about four times between 6 A.M. and 9 P.M.

Patient left the hospital very much improved in general health, and has promised to come back for an operation for epispadias.

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MARCH, 1907

THE BURMA GOVERNMENT MEDICAL SCHOOL

THE position of Hospital Assistants in Burma is attended with difficulties in regard to the general expensiveness of the country, and the frequency with which the duties they are called upon to fulfil demand prolonged absence from centres of civilization. To this lack of inducement to serve in Burma is added the fact that the native of India, who has hitherto contributed largely to the strength of the Subordinate Medical Department, has to contend with the ever-recurring difficulty of impecunious relatives in India, demanding unreasonable remittances for marriages and funerals, some of which might be well less forcibly insisted upon, were the supplier of funds not held to be in receipt of a larger income than he actually has the benefit of. Thus, it is not too much to say that 50 per cent of a Hospital Assistant's pay goes to fill the vacuum caused by differences of prices in India and Burma. Hence, various schemes have been adopted with the hope of making the service more popular chiefly in the undesirable direction of increasing special allowances. Finally, it was found necessary, in addition to these, to give a so-called "Burma allowance" which added in some grades 100 per cent to the pay allowed for similar grades in India. Nevertheless, the supply of Hospital Assistants is very far below the demand, but as they have recently (as has been the case with the same class of Medical Subordinates in other Provinces) submitted a memorial to the Government of Burma setting forth suggestions for improvement of their prospects, it is to be hoped that some effort will be made to render more popular this important branch of the Indian Medical Department. In the meantime, the Government of Burma, acting upon a recommendation originally made by Colonel Little, when Inspector-General of Civil Hospitals, Burma, has determined to open a Medical School in Rangoon, for the education of candidates for posts of Hospital Assistants in its service. Necessarily, its particular desire is to secure Burmans, so as to reach the people in its charge in the most sympathetic manner feasible.

Luckily the Burmans, notwithstanding their notorious "happy-go-lucky" dispositions, take

to medicine in a serious spirit, and it is generally agreed by officers under whom they have served that they are excellent material for the profession. For this purpose, stipends have been offered by the Government of Burma. Unfortunately, these are limited to only Rs 10 per mensem for the first two years of study, and Rs 20 during the remaining two years. Having regard to the fact that, in Rangoon, a cooly has to pay Rs 5 per month for a share of a room in which there may be a couple of dozen of fellow-lodgers, it is doubtful whether these stipends will prove attractive, certainly, no house room suitable for a candidate Hospital Assistant is likely to be obtained under from Rs 20 to Rs 25 in Rangoon, so that whether candidates will come forward in sufficient numbers is open to doubt. However, in the hope that this will be so, it has been advertised that the new Medical School was to be opened on the 1st of February. Lt-Col Davis, I M S, the present Civil Surgeon, Rangoon, is to be the first Superintendent, and Major Penny, Junior Civil Surgeon, and Captain Rost, I M S, Resident Medical Officer, Rangoon Civil Hospital, will be the lecturers. The curriculum proposed by Col King is slightly different from that followed in India, namely —

1ST YEAR	2ND YEAR	3RD YEAR	4TH YEAR
Anatomy	Anatomy	Operative	Midwifery
Chemistry	Materia	Surgery	Medicine
Physiology	Medica.	Hygiene with	Therapeutics
Out-patient	Surgery	Microscopical	Clerking in
room	Out patient	and Bacterio	Wards
	room and	logical de	Medical
	in patient	monstrations	Clinics
	Clinics	Medical Juris	P M Demon
	P M Demon	prudence	strations
	strations	Dressing in	
		Wards	
		Surgical	
		Clinics	

Until it is ascertained that the success of the school is established, it will be conducted in a temporary building which has already been completed within the same compound as the New General Hospital, Rangoon. This is a combination of brick-nogging, lined with "eteinit" painted with white silicate paint. The wall surface thus afforded gives the requisite smoothness and imperviousness cheaply.

Current Topics

BLACKWATER FEVER

FORTUNATELY in India we are practically free from the dread blackwater fever of Africa, except in the *Tera* districts and especially in

the Duars and ten garden districts at the foot of the Darjeeling Himalayas

Hæmoglobinuria, we know, may result from several causes, and occasionally cases ascribed to malaria have been reported in India. The dreaded 'blackwater' fever has been ascribed to malaria, but we are of opinion that this view is not tenable, though, undoubtedly, malarial fevers of a severe type are also prevalent in districts affected by blackwater fever. It is probable that there will be in time discovered the true parasite or organism which causes blackwater fever, meantime opinion in India has all along been strongly opposed to Koch's view that this terrible and fatal blackwater fever was due to quinine in malarial-stricken subjects. The free and abundant use of quinine in India, both as a prophylactic and as a remedy in true malaria, shows that there is no good foundation for Koch's view.

Our attention has been directed to this subject, not only by the recent reports of the deaths of Europeans in the Duars from blackwater fever, but also by the appearance of a useful article in the *Journal of American Medical Association* (December 8th, 1906).

In this article Dr. W. V. Brem, of Aucon, in the Isthmian Canal Zone, reports 14 cases of hæmoglobinuria occurring in 1,107 cases of malarial fever treated in the "white fever wards" of the Aucon Hospital.

We quote as follows —

Blood examinations for malarial plasmodia were made with dried smears stained by Hasting's modification of the Nocht Romanowsky stain, except the examination in Case 1, when the fresh preparation was used. Sahli's hæmometer was the instrument used for hæmoglobin estimation, except in case 7, where Dreyer's hæmoglobinometer was substituted. Tests for hæmoglobin in the urine were made by the sodium chloride and glacial acetic acid method. The quantity of albumen in the urine was estimated by bulk, i. e., the coagulum in boiled and acidified urine was allowed to settle for 24 hours in a test tube, the bulk of albumen and the bulk of urine were measured by rule, and the percentage of albumen was estimated. The term, blackwater, is used to describe urine when no test for hæmoglobin was made, the term, hæmoglobinuria, is used when the test was made.

The main points brought out by a study of the cases are: (1) The only etiologic factor discoverable was a febrile affection resembling the astivo autumnal type of malarial fever, previous attacks of malarial fever appeared to furnish a good, but not essential ground for the development of hæmoglobinuria, previous administration of quinine did not appear to be an etiologic factor, either predisposing or exciting. (2) In every case hæmoglobinuria disappeared more or less promptly following the administration of quinine by intramuscular injection, but quinine did not influence the excretion of hæmoglobin after the production of hæmoglobinemia during a paroxysm. (3) The sequence of events seems to be corpuscular destruction, hæmoglobinemia, hæmoglobinuria. (4) Anæmia was unusually exceedingly rapid in progress and recovery was very rapid, the symptoms and signs of the disease may be very mild, a peculiar febrile disturbance sometimes followed hæmoglobinuria and was uninfluenced by quinine. (5) Albuminuria, sometimes of an extraordinary degree, was a constant accompaniment of hæmoglobinuria and ran a course more or less parallel with it. (6) Certain criteria are advanced for

the probable diagnosis of hæmoglobinuria when the positive diagnosis by the test for hæmoglobin, is not made. (7) The relative value for intramuscular injection of quinine bismuriate with urea and quinine bilydrochloride is discussed and also the size and frequency of the dose.

In this connection we note another article in the *Edinburgh Medical Journal* (January 1907) by Major D. G. Marshall, I.M.S. (ret'd), now Lecturer on Tropical Diseases in the Edinburgh Royal Colleges. He is reviewing a new book* by Dr. Louis Védý who has had much experience of the disease in Africa. Four theories as to cause of blackwater fever are given, viz — (1) a form of malaria, (2) an idiosyncrasy produced by a diathesis, (3) the result of toxic medication, (4) a disease due to a specific element.

We quote the following from Major Marshall's note —

After quoting the experiences of Karamitzis, Antoniadis and Tsakyrakion in Europe to show that the disease frequently occurs in people who have never suffered from malaria, the author quotes a series of cases to support his view, e.g., that the disease is *not* a form of malaria, and that quinine, methylene blue, and other drugs only act as occasional factors in determining the onset of the symptoms, in the same manner as chill or excessive fatigue, the conclusion finally reached being that "blackwater fever is due to a toxin probably elaborated by a special micro organism." Breaudat and Yersin have described such an organism, but their results have not been confirmed. There is a valuable chapter on treatment which opens with a few simple directions for the guidance of travellers and others in cases where medical aid is not available.

Regarding the much vexed question "to give or not to give quinine," the following rules are laid down —

1. If, twenty-four hours after the onset, malarial parasites are present in the blood, give a small dose (12 grs.) of quinine.

2. Never give quinine if malarial parasites are not found in the blood.

3. If in doubt (if an examination of the blood is not practicable), do not give quinine.

The routine treatment recommended is directed to the elimination of the supposed toxin, and consists of free purgation followed by frequent enemata, and in serious cases saline infusion, with diluents (warm water, weak tea) freely by the mouth. Symptoms are treated as they arise, tendency to heart failure by caffeine and champagne, vomiting, after the first day by morphia and counter irritation, the use of antipyretics and digitalis is contra-indicated, while a case in which death rapidly followed the administration of a small dose is quoted to show the danger of using pilocarpine in this disease.

We earnestly hope that a medical officer will be placed on special duty to investigate the serious prevalence of this fell disease in the tea and tea-planting districts of the Duars at the foot of the Darjeeling Himalayas.

THE LUNATIC ASYLUMS OF EASTERN BENGAL AND ASSAM

THIS report on the working of the two lunatic asylums, one at Dacca and the other at

* La fièvre bilieuse hæmoglobinurique dans le basin du Congo. Paris. A. Maloine.

Tezpur in the new Province has been written by Colonel D. Wilkie, I M S. The Tezpur Asylum has been in charge of Lt-Col J. W. V. Macnamara, I M S., and the Dacca one in charge of Lt-Col Neil Campbell, I M S.

The average strength of patients in these two asylums was about 430, about 93 patients were admitted annually during the three years with which this report deals. About one-half of the lunatics were classed as "criminal lunatics," that is, they had committed some kind of crime, petty or great, before their admission to the asylum.

Of the 315 patients admitted during the three years, the type of insanity which prevailed was maniacal and the cause was given as *ganja* in 47. The usual complaint of carelessly prepared medical history sheets is made, and as in all Provinces this complaint is perennial. We are glad to know that the Government is taking steps to improve this matter. The death-rate in an asylum is naturally high, and was 64, 93, and 65 per mille of average strength in Tezpur, and 55, 67, and 81 per mille in Dacca. These are high figures, and we agree with Colonel Wilkie in his view as to the urgent necessity of special tuberculosis wards, as this disease has now—at last—been recognized to be a most important factor in Indian vital statistics, and especially in the provinces of Bengal and Eastern Bengal.

The following table given in rates per mille of average strength, comprises the asylum death-rates over all India in the year 1905—

Burma	726	per mille of average strength
E B & A	746	" " "
Bengal	919	" " "
United Provinces	875	" " "
Punjab	928	" " "
Bombay	600	" " "
C P	989	" " "
Madras	1460	" " "

There was overcrowding for some time in the Dacca Asylum, and Colonel Campbell thinks that many harmless lunatics who could well be looked after by their friends are sent to the asylum. New barracks are being built.

We do not attach much importance to the question of cubic capacity per head in wards in those parts of India, like the two Bengals, where windows and ventilating openings can be so constructed as to be open by night and day, so that if 50 square feet of floor space per head is given, it is a low minimum only and 75 sq feet should be regarded as the minimum for this class of patient, and 100 sq feet would be still better, as it is obviously objectionable to keep lunatic patients with their too often dirty habits too close together. No ceiling or roof should be under 13 feet from floor, and if for the mild climates of the two Bengals half a window per patient is allowed, and if shutters only extend to within 20 inches from the top of the grated windows then there will always be a free perfusion of air. If ordinary shutters are provided, they will be closed by the

inmates (in spite of any orders to the contrary), and the state of the atmosphere in such a ward in the small hours of the morning can only be believed by those who have experienced it—(*Experto crede*)

HISTORY REPEATS ITSELF

"BERIBERI and UNICINARIA.—At the séance of the Acad. des Sciences, Paris, June 5, 1906 (*Progress Med* 3d Series, Vol. xxii, June 16) M. F. Noc reported some facts concerning beriberi, observed in the native hospital at Choquin, near Saigon, French Cochinchina. In 77 cases of beriberi in Chinese and Annamites, he found in 74 examinations great number of the eggs of *Uncinaria americana* (Stiles) in the dejections, and he also found them in 17 out of 82 Annamites, themselves unaffected but living among those who were. On the other hand, he failed to discover it in the dejections of 31 Europeans suffering with various bowel disorders, diarrhoea, dysentery, etc. He remarked that some of the symptoms described by Stiles as occurring in American uncinariasis, such as oedema of the face and limbs, dropsy, nervous troubles, are also present in beriberi. In the autopsies of those succumbing to the disease he always found the lesions of gastroenteritis and whenever a hemorrhagic puncture was observed in the neighbourhood of the pylorus a careful search showed the uncinaria. The thymol treatment, moreover, by expelling the parasite, ameliorated the symptoms of beriberi with surprising rapidity. From all these facts he has been led to think that this hookworm plays a notable part in the etiology of beriberi."

The above note shows how medical history repeats itself. In the early nineties ankylostomiasis (or uncinariasis as it is called in the United States) was discovered in Assam, and because it was found so common in *Kala azar* patients, it was thought to be a main cause of the deadliness of this fever, then considered malarial. Owing moreover to the oedema, dropsy and anæmia, which occur in *Kala azar*, ankylostomiasis and in beriberi, cases presenting such a combination of symptoms were often erroneously spoken of as "Assam beriberi." The same mistake was made twenty years ago in Ceylon, and the above extract shows that ignorance of the literature of the past twenty years is leading to a similar confusion in Cochinchina.

At present the facts appear to be as follows—

Ankylostomes or hookworms are extremely common in all Eastern countries (see *I. M. G.*, January, 1907, p. 27), they are especially common in Bengal, Assam and Ceylon, and can be found consequently in cases of almost any disease. It may be that in rare cases they are so very prevalent in the intestines as to produce anæmia and dropical symptoms, by excretion of toxins, not, as formerly believed, by mechanical abstraction of blood. To judge by reports about the East Indian coolies in the West Indies this seems the view taken of such cases.

We also now know that *Kala azar* is due to infection by the Leishman-Donovan bodies and the resulting cachectic fever ends with symptoms of oedema and anæmia. Beriberi, that is true endemic neuritis, also has been shown to exist in isolated epidemics in Assam. We make

these remarks for the benefit of a younger generation. The facts will be familiar to those who remember the literature of the subjects in India since 1890.

Beriberi still remains the unknown disease, much has been written about it of recent years, but its cause has still managed to evade all our efforts. It is time that this subject was seriously investigated in India. It is especially common in Rangoon.

TYPHOID TREATMENT IN MILITARY HOSPITALS

IN a practical article in the *Journal R A M C* (November, 1906) we are glad to see that Colonel Forman and Capt R Selby, R A M C, pleaded for the use of the cold bath method of the treatment of typhoid, on the lines advocated in the well-known book by Dr F E Hale, of Queensland (now of the Norwood Sanatorium, London).

The writers point out that this powerful therapeutic agent has not been properly appreciated in Military Hospitals and they naturally point to the terrible high case death-rate from typhoid among British soldiers, viz., 25 per cent instead of 10 per cent or even much less, as indicating that something more is needed. Col Forman and Capt Selby report a group of 68 cases treated by cold bath methods with a mortality of only 5.8 per cent, a vast improvement indeed. Our authors recognize the undoubted fact that the method is a troublesome one, but by use of proper appliances which should be in every station hospital, the "trouble" can be very largely reduced. A bath with rubber-tired wheels, a perforated canvas stretcher and a back rest with water cushion can be provided after the pattern illustrated in the article we quote from.

We strongly recommend this practical article to our readers and may mention that the writers recommend tional for the dreaded insomnia of the disease. The whole article is worth reading.

TROPICAL LIVER

SINCE the days in the end of the eighteenth century when the returned Anglo-Indian was called a "Nabob" and took the place in London society, now taken by the African and American millionaire, the public mind has associated a yellow complexion and an anæmic appearance with the "bad liver and worse heart" supposed to be acquired by a long residence in India. Even at the present day the medical man in England, who has no tropical experience, is very apt to consider that every sallow-faced man who consults him has something wrong with his liver, and if on examination the liver must be acquitted, then the home practitioner or consultant can always fall back on the equally exploded fallacy of a "touch of malaria."

We are glad, therefore, to see an eminently common-sense and practical article by Mr James

Canthle on "Tropical Hepatic Ailments met with in British Practice" (*Polyclinic*, January 1907).

Mr Canthle first of all points out correctly that the yellowish tinge, not rarely seen in Europeans who have resided in the tropics, is not due to "liver" at all. It is certainly not jaundice, for the conjunctiva is pearly white. It is what Canthle calls a "tropical mask," or a patchy or sometimes fairly general pigmentation of the face, neck and hands, that is the exposed parts. It is more common in women, or probably is more often complained of by them. It is not parasitic, but appears to be a pigmentation due to exposure to the light. In our opinion it is, on the whole we think, more common in brunettes than in blondes.

This pigmentation must, of course, not be confounded with the more serious pigmentation due to malaria, spleen trouble, anæmia, etc., which is the result of the disintegration of hæmoglobin.

Mr Canthle then goes on to discuss the effects of a warm climate on the liver. When a northern European first takes up his abode in a warm country, the bile, he tells us, is increased in quantity and the stools are copious, soft, and of greenish-black hue. Then, writes Mr Canthle, this state of physiological excitement and hepatic fullness may continue for four to eight months, when the fæces become pale, and constipation begins, with possibly dyspeptic troubles, and the liver actually decreases in bulk. Next, one of two things happen, the liver remains small and is frequently associated with intestinal troubles, chronic diarrhoea or spue, or the liver increases in size, and its edge becomes easily felt. This latter condition being usually due (says our author) to want of sufficient exercise and excessive eating and drinking. So far so good, and no doubt Mr. Canthle is right in his description of the two kinds of liver and then attendant symptoms, but the reader or hearer of this lecture would be apt to think that one or other of these conditions is inevitable, whereas, as a matter of fact, the great majority of northern Europeans who come to India, at any rate, are blissfully ignorant of any such hepatic disturbances as are above described, and will tell you they feel as "fit" as ever they were.

Mr Canthle wisely says that the part played in enlargement of the liver in malaria is a vexed question, that enlargement of the liver follows Leishman-Donovan infection, has recently been demonstrated by Leonard Rogers. Mr Canthle is on safe ground when he says that hepatic derangements attributed to "climate" are too often due to the abuse of alcohol. The following picture is probably correct—albumen in the urine, an enlarged liver, combined with a watery morning diarrhoea, and a feeling of retching when brushing the teeth. Such a state is very likely to be due to the abuse of alcohol.

How then is a patient, such as is now to be described, to be treated when he gets home? The patient has chronic enlargement of the liver, he has had "fever," which may or may not have been due to malaria, he has had attacks of diarrhoea, dysentery, or it may have been called muco-enteritis, there is a slight rise in the evening temperature.

On such a case Mr Cantlie has given the home practitioner some good advice. In the first place, such a patient is not to be sent to the seaside, the home practitioner's panacea, nor are all continental spas desirable, certainly not when the patient is run down. Mr Cantlie tells us to send such a patient in summer to the north-east part of Yorkshire or to the countries of Banff, Moray or Nairn in Scotland. In the winter send him to Switzerland, high up in the hills, where he (or she) can have outdoor life with exercise in a dry sunny bracing atmosphere. Again says Mr Cantlie, "Keep your patient away from 'Rivieras,' real or nicknamed, there are many spas in Britain calculated to do good, in summer, Harrogate, Matlock, or Strathpeffer, and in winter Bath."

For the rest of the treatment we may quote as follows—

Life in a city is not calculated to benefit a person in the condition in question. The diet should not be too restricted. No soup, or pastry, or "bulky" vegetables, such as cabbage or Brussels sprouts. No fluid during meals, except a claretglassful of plain water, or with a tablespoonful of whiskey, or half water and hock, sipped slowly towards end of meal. No soda or other effervescing water.

Drugs—Treat for a week with slight aperient doses of rhubarb and soda, afterwards chloride of ammonium in an acid or alkaline tonic mixture—the former the better if the appetite is good.

It is now well established that the form of skin eruption known as ground itch, or *pani ghao*, a common affliction of bare-footed people in places infected by ankylostomiasis, is a dermatitis produced by the ankylostome or hook worm in its penetration of the skin. Certain experiments (*Journal, A M A*, December, p. 1695) recently made by Dr C A Smith, of Atlanta, U S A, tend to show that the larvæ of the *Uncinaria Americana* (the form of the hook worm found in the United States) produce some substance which is very irritating to the skin, producing severe itching, with a tendency towards vesicle formation. No doubt, the object of this irritation is to cause scratching and rubbing of the part, which no doubt facilitates the passage of the larvæ through the tissues.

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LIEUTENANT-COLONEL D B SPENCER, I.M.S., whose work in attempting to differentiate the

continued fevers of India is well known to our readers, has published in pamphlet form several of the papers on the subject of paratyphoid fever and Indian enteric which have appeared in the pages of this Gazette. To these he has added an interesting article on paratyphoid fever, which formed an address before the Medical Society of Mauritius. In this Colonel Spencer recapitulates his views on the nature of Indian enteric, and collects a lot of useful information from the recent literature of the paratyphoid question. In co-operation with Captain H E Staddon, R.A.M.C., Lieutenant-Colonel Spencer publishes also in the same pamphlet a case of paratyphoid, in an European in Mauritius. The case ran a long course, till the ninth week, and the reaction of the blood was found to be negative to both *B. typhosus* and to *B. coli communis*.

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In view of the excellent symptomatic effect produced by the X-rays in leukaemia, Demarchi investigated the action of X-rays in malarial infection. He has tested the effect in a large number of cases, and no definite action was observed upon the malarial parasites. The number, vitality, and cycle of development remained unaltered. In most of the cases the spleen was exposed to the rays, as probably forming the chief depository of the infective agent, but no diminution in the number of the attacks was obtained. On the other hand, as soon as the febrile attacks were checked by other treatment, exposure of the spleen to the rays resulted in a marked reduction in the spleen, and therefore it is possible that the ray treatment may tend to diminish the number of relapse attacks (*Polivlin*, Rome, 1906, June, quoted in *Edin Med J*, January 1907).

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We have received the first number of the new quarterly called *The British Journal of Tuberculosis*. It is edited by Dr T N Kelynack, and published by the well-known medical publishers, Messrs Baillière, Tindall & Cox. The price is only 5s per annum. It will be the responsible organ for the record of all that related to the worldwide movement known as the "Antituberculous Campaign." A long list of original articles is given for future issues. The first number contains papers by such well-known men as Clifford Allbutt, Douglas Powell, Lauder Brunton, Hermann Weber, Sir J W Moore and Sir S Wilks. The new quarterly promises to be of very great value to all interested in tuberculosis, and in no country is a full knowledge of tuberculosis problems more necessary than in India, where tubercle of the lungs is such a serious factor in the mortality of natives of India.

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ONE is familiar in medical literature with the statement that such and such a disease is

unknown in certain districts, when it only means that it has not been looked for, and not therefore found. A recent example of this is published by Dr Paul G. Woolley, who recently came as Chief of the Siamese Government Serum Laboratory from Manila to Siam. Dr Woolley's studies in the prevalence of amœbiasis are well known, and on his arrival in Siam he was naturally surprised to find it stated that the disease was very rare there. He determined to find out for himself, and out of 50 prisoners examined in the prison at Bangkok he found 18 cases of intestinal parasite infection as follows:—

<i>Amœba</i>	11 cases
<i>Uncinaria duodenalis</i> (ova)	4 cases
<i>Tricocephalus dispar</i> (ova)	4 cases
<i>Strongyloides intestinalis</i> (ova)	3 cases
<i>Opisocotus sinensis</i> (ova)	1 case
<i>Ascaris lumbricoides</i> (ova)	1 case
<i>Hymenolepis nana</i> (ova)	1 case

Many of these were, of course, plural infections. Three of the above patients were suffering from amœbic dysentery. It is clear from this that amœbic infection must be pretty common in Siam as it is in most tropical countries.

MEDICAL etiquette, instead of being kept up, as people so often imagine, in the interests of the doctors, is maintained in the interests of the public. It is they, not the doctors, who would suffer most were it done away with.—*The Spectator*.

ASSISTANT Surgeons and Hospital Assistants who have not yet received the Circular about the lowering of the annual subscription to this Gazette may obtain it by applying to Messrs Thacker, Spink & Co, Calcutta.

Reviews

Syphilology and Venereal Disease—By C F MARSHALL, F.R.C.S. X+509 pages 5 Plates. Demy 8vo. Price, 10s 6d net. London: Baillière, Tindall and Cox. 1906.

SINCE the well-known work on Syphilis and Local Contagious Disorders by Berkeley Hill and Cooper some 25 years ago, there has been no book published in England dealing in a systematic manner with syphilis and venereal diseases.

The present volume by Dr Marshall, late House Surgeon of the London Lock Hospital, is one of considerable importance, and seems to us a very complete and up-to-date treatise on these ever important diseases.

The light that has been thrown recently on the pathology of syphilis by the work of Metchnikoff, Neisser and Fingel, the discovery of the spirochæta pallida by Schaudinn and

Hoffmann will be found reflected in these pages. Another important chapter is on what is now called parasyphilis, and the share taken by syphilis in the etiology of general paralysis, arteriosclerosis, aneurism, Bright's disease, epilepsy and cirrhosis of the liver are fully discussed.

The author acknowledges his indebtedness to the teachings of Fournier on syphilis, and to that of Fingel and Neisser on gonorrhœa.

Dr Marshall also emphasizes the importance of both syphilis and gonorrhœa, "the oldest diseases which afflict mankind," as etiological factors in disease.

The historical chapter is very interesting. It is clearly shown that syphilis was well known before the great epidemic of the 15th century, which was due largely to the soldiers employed by Charles VIII of France in the invasion of Naples in 1494. Hippocrates and Celsus have described ulcers of the penis, and the poet Martial clearly writes of a contagious venereal disease. Syphilis also appears to have been known to the Hindus in the year 1,000 B.C., and Brierley quotes from the Ayurvedas clear references to gonorrhœa, chancres, orchitis, ulcerations and papules on face and throat, and the use of mercury by the ancient Hindus is well known. Syphilis also appears to have been known in China 4,000 years ago. Syphilitic nodes have been found by Vichow on prehistoric tibias.

It was John Hunter who in 1786 reintroduced and popularized the mercurial treatment, though he held to the identity of gonorrhœa and syphilis on the strength of his famous experiment on himself. It was Benjamin Bell who in 1792 showed the duality of these two diseases by inoculation experiments on medical students who volunteered for the purpose, but the "unicist doctrine" was not finally disproved till the work of Ricord, 1831-38. The contagiousness of secondary lesions was established by Wallace of Dublin in 1835, and at the same time Wallace first introduced the iodide of potassium treatment. We strongly recommend this book to our readers. It is a complete up-to-date and authoritative treatise on venereal diseases, and its low price places it within the reach of all.

A Manual of Anatomy.—By A. M. BUCHANAN, M.A., M.D., C.M., F.R.F.S., Glasgow. Pages xvi + 596, with 216 Illustrations. Publishers: Baillière, Tindall and Cox, London. Price, 12s 6d net.

THE author's object, as stated in the preface, has been "to combine a manual of practical anatomy with a text-book of systematic anatomy, and so furnish students with a complete treatise on the subject." "The subject of embryology is dealt with by appending to the description of each viscus and organ, a concise account of its development, in the hope that this method may enlist the attention of students in this very important subject."

The work consists of two volumes, and Vol. I, now before us, deals with osteology and the upper and lower limbs. The section on osteology treats of the subject fully, the descriptions of the various bones being clear and concise; an account of its ossification is appended to the description of each bone.

The remainder of the volume is devoted to the systematic anatomy of the upper and lower limbs; the descriptions are short, clearly written and generally correct.

The part which constitutes "the manual of practical anatomy" consists of a number of pages of small print, appended to the sections on the upper and lower limbs. It is doubtful if students, especially junior students, will find these pages of much practical assistance; there are no explanatory plates or diagrams, and instructions in the method of carrying out the dissection of the various parts are not always full enough.

The "concise accounts of development" are too short and often not sufficiently clear.

The book is well got up and clearly printed on thin paper; the illustrations, many of them coloured, are numerous and well executed.

Tamil Grammar, Self-taught, with Grammar, Exercises and Key—By M. DEZ. WICKRAMSINGHE. Crown 8vo, 120 pp. Price, cloth, 5s, wrapper, 4s. London: E. Marlborough & Co., 1906.

THIS seems to us to be an admirable little book on the Tamil language, intended for those who wish to acquire a knowledge of colloquial Tamil. It belongs to the well-known Marlborough Series of Foreign Manuals.

It is intended for use without a teacher. It has not the ambition to rival Dr. Pope's handbook, but as a book for beginners it can scarcely be beaten. It can be confidently recommended to medical officers in Madras, Burma, Ceylon or other places where Tamil-speaking peoples most do congregate. It is written in both Roman and Tamil characters.

The Bacteriology and Etiology of Oriental Plague—By E. KLEIN, M.D., F.R.S. MacMillan & Co.

THE present volume consists of a collection of papers which have already been published in the Annual Reports of the Medical Officer of the Local Government Board, supplemented by other studies of the *B. pestis* in its morphological, cultural and physiological characters and in the manner of its conveyance and action. It also contains the results of the author's investigations bacteriologically of materials from suspected and real cases of plague of human beings and of rats. When appraising the value of the work as a help to the student of Oriental plague, it is well to remember that the observations which form its basis were made in England and that the author has had no opportunity of studying plague in a country where the disease assumes epidemic proportions. The few cases both in man and in rat which he has seen have

been imported from abroad into one or other of the seaports of Great Britain. The bulk of the observations described by the author are of the nature of experiments, done in the laboratory with cultures of varying degrees of virulence, and any conclusions which he makes as regards plague in nature are drawn from such observations.

Chapters I and II contain an account of the bacillus *pestis*, the essential cause of Oriental plague. The distribution of the bacillus in the body of plague cases is described for the different varieties of the disease. In this connection Dr. Klein describes as common the occurrence of bloody mucus containing abundant plague bacilli in the intestine. This is not the experience of Indian observers. The description of plague in the rat strikes us as being very inadequate, no doubt owing to the fact that the author has seen so little of the disease in nature.

The characters of the bacillus *pestis* are fully described, these being treated under the headings of morphology, cultural characters and experimental.

In this connection we have to note that the author differentiates between two types of bacilli, the one a virulent type which is got from man, and the other a less virulent type which is characteristic of the rat. The very large experience of Indian workers does not support Dr. Klein in this refinement.

Chapter III dealing with the method of analysis of plague material consists of a description of the analysis of materials from suspicious cases of plague in man and rat introduced into the United Kingdom. This chapter along with the next one which deals with the microbes simulating in one or another respect the bacillus *pestis* should be of considerable use to Medical Officers of Health of towns into which plague is likely to be introduced. The advantages of early bacteriological diagnosis are emphasized and the method of doing this is detailed.

Chapters V, VI and VII deal with plague in the rat and other rodents and the methods of infection of animals with plague in nature. The description of the natural disease in the rat is very limited, for instance, no mention is made of such a point as the distribution of the primary bubo in naturally infected rats. Further, we believe that the experience of the present Plague Commission goes to show that the intestinal form of plague does not occur in nature.

As regards plague experimentally produced, we notice that the author considers that rats are as susceptible as guinea-pigs, and that the cutaneous method of injection is as sure a method of giving the disease as the subcutaneous.

In India the laboratory experience is contrary to this statement. The guinea-pig is undoubtedly the most susceptible of all animals, and subcutaneous inoculation is more reliable than

the cutaneous method introduced by the Austrian Commission

We should also draw attention to the very unscientific classification of rats by their colour which the author had adopted. We are quite at a loss to know to which species he refers when he talks of black or plum-coloured ship rats nor do we appreciate his difference between the common sewer rat and the Norway rat. In Chapter VII, Dr Klein puts forward his views as to the mode by means of which infection of animals takes place in nature. These are of so much importance that we reproduce his summary verbatim —

"While then, the transmission of plague from animal to animal is experimentally established, both as regards cutaneous inoculation and feeding with semi dry infective material, there is a distinct failure of evidence that transmission of the disease is effected by fleas or lice from an infected animal to a healthy one. It is not, therefore, in my view justifiable to regard this mode of transmission, if indeed it happens at all under natural conditions, as anything but exceptional, at any rate as far as the sewer rat and the tame rat are concerned. Theoretically such a transmission is possible and easily imaginable but what I wish to insist on is that such an occurrence is not likely under natural conditions to be anything but exceptional, and there is no direct evidence that this has happened, and in cases where it might have been expected to happen, e.g., in many experiments recorded by me it certainly did not do so!"

In coming to the above conclusion Dr Klein takes no cognisance of the experimental results got by Ray and Gauthier nor of the brilliant epidemiological facts elicited by Ashburnton Thompson in Sydney. His conclusions, in short, seem to be based on a number of laboratory experiments of his own. Further, the experiments as regards flea transmission, which he judges were failures, are not worth consideration as no trouble was taken to ascertain if fleas were present or not. In fact, we must take it that no fleas were present as Dr Klein in a footnote makes the admission that never either on sewer rats or on tame rats, with which his experiments were done, has he taken any fleas. Finally, these conclusions are directly opposed to the results of the present Plague Commission, so that we should imagine that the author would have to modify his opinion considerably.

The next two chapters are taken up with an account of experiments on the agglutination of the plague bacillus and with a description of protective inoculation against plague. Contrary to the opinion of nearly all practical workers, the author considers the agglutination test to be of some value as a means of diagnosis of plague cases.

A description is given of the method of preparation of Haffkine's prophylactic and of the constitutional changes in animals which follow its injection. Further, a number of observations as to the protection against plague infection conferred on animals by previous injections of this vaccine are recorded. We notice the lack of any statistics referring to the results obtained in cases of human plague.

The author then proceeds to relate the discovery of a new prophylactic for which he claims many advantages over the one to which we are accustomed in India. This claim is based on a few laboratory experiments which seem to us to be anything but conclusive.

The final chapter deals with the different modes of destruction of the bacillus pestis and contains nothing new.

Taken as a whole, therefore, the book appears to us, as we have already anticipated, to have been written by one who has had no practical experience of plague outside of ordinary laboratory experiments on rather a small scale and made in a country where plague is not epidemic. It is in short more an academic study of plague, founded on laboratory observations, than a practical text-book on the etiology of plague. It would in consequence be of little use to any one called upon to deal with the disease in nature.

We may mention that the text is beautifully illustrated with abundant photographs, but suffers much from the want of an index.

Nothnagell's Encyclopædia of Practical Medicine Diseases of the Kidneys and of the Spleen Hæmorrhagic Diseases—By DR H SENATOR and DR M LITTEN. Edited with additions by JAMES E. HERRICK. Translated from the German under the supervision of ALFRED STANFORD, M.D. W. B. Saunders & Co., 1905.

THE main portion of this handsome volume is taken up with Dr Senator's very excellent account of diseases of the kidneys, the translation of which from an up-to-date second edition of the work is a distinct gain to English medical literature. The slight additions made by the editor are clearly shown by being placed within brackets, the text, the original itself, not being otherwise altered, a method which has the disadvantage, in some instances, of necessitating two succeeding sentences containing contradictory statements. For example, an added note in the description of chyluria correctly states that the filaria infection is conveyed by the bite of a mosquito, and follows a contrary statement that it is through drinking water which has been contaminated by that insect. The operative treatment for Bright's disease is significantly passed over in silence by Senator, while the editor only mentions it to rightly condemn its extended use. Under the head of hæmoglobinuria, blackwater fever is merely mentioned, and the *Distoma hæmatobium* is also very scantily treated of, although of great importance in some sub-tropical climates. An account of cryoscopy has been added, and its value is considered to be little unless the freezing point of the blood is taken at the same time, and even then many precautions are necessary when interpreting the results. With the exception of the somewhat brief treatment of some points of special interest in the

tropics, we have nothing but praise for this part of the work

The section on diseases of the spleen is not quite so satisfactory, partly on account of the great difficulty in separating diseases of this organ from certain general and blood diseases, which has caused some overlapping with the volume on blood diseases, but still more because of the defects due to the system adopted of adding on notes to the original text without altering statements in it which have become obsolete or absolutely incorrect with advancing knowledge. This is specially noticeable in the section on the spleen in intermittent fevers, in which the older methods of staining for malarial parasites are described and the now universally adopted way of using Romanowsky's stain or one of its many modifications is not dealt with. Further, we have been able to find no reference to *Kala azar* and its parasite, although the book is dated two years after the discovery of this organism, so that it cannot be said that this section is up to date from the point of view of tropical medicine. Spleen puncture is only mentioned in connection with the diagnosis of typhoid fever, and is considered not without danger and unnecessary now that the Widal test is available. Nevertheless, it contains a store house of knowledge which makes it of great value as a work of reference.

The last section of hæmorrhagic diseases is a valuable contribution, although we miss references to Wright's work on the subject of hæmophilia, while calcium chloride should surely have been mentioned as in the treatment of this condition. In the account of scurvy the disease is said to be very common in an epidemic form in India, the basis for which statement we do not know, while it is still an open question whether some yet undifferentiated ulcerative conditions of the mouth are not often confused with scurvy in the tropics.

The work should certainly be found in every library for reference purposes, the account of kidney diseases especially being one of the best we are acquainted with.

The Sigmoidoscope—By P. LOCKHART MUMMERY, F.R.C.S. Pages x—88. Illustrations 19. Crown 8vo. Price, 3s 6d net. Baillière, Tindall & Cox, London.

THIS book contains an account of how to use the Sigmoidoscope and the appearances of normal and abnormal conditions seen with it, although as the author states skill in its manipulation can only be obtained by practice, yet this book will be of very considerable use to a beginner or to any one who has not had many opportunities of using the instrument.

The structure of the instrument is first described, the form preferred is Strauss's with a modification introduced by the author. The technique of examination is then considered with an account of the appearances noted in a

normal subject. After this, cancer of the rectum and sigmoid is discussed, followed by a description of the various forms of ulceration, etc., which are common to this part of the bowel. It is in the former class of case that the instrument is so useful, the extent and mobility of the growth being capable of being accurately determined.

The descriptions are excellent and the illustrations are well executed and add considerably to the value of the work.

Retroperitoneal Hernia—By B. G. A. MOYNIHAN, M.S., F.R.C.S. Second Edition. Pages vi—195. Illustrations 40. Plates xii. Demy 8vo. Price, 7s 6d net. Baillière, Tindall & Cox, London.

THE original lectures on which this work is based were originally delivered in 1897, and since then a considerable amount of work has been done on the subject, and this necessitated a second edition.

The book opens with a short account of the development of the intestinal canal. The folds and fossæ about the duodenum are then described, the more common ones fully and the rarer varieties less so. After which the different kinds of hernia met with their symptoms, diagnosis, and treatment. The cæcal fossæ are then dealt with in a similar way, and later hernia into the intersigmoid fossæ and into the Foramen of Winslow.

The redundancy of the nomenclature which has, at one time or another, been applied to the various folds and fossæ often renders it difficult to understand descriptions of the various authors, but Mr Moynihan has certainly succeeded in giving a clear and concise account of his subject.

There are many cases included, the opinions of various authors are considered and the illustrations and plates are both good, in fact, the book can be considered a very complete resume of the subject.

Genito Urinary Diseases and Syphilis—By HENRY H. MORTON, M.D. Second Edition. Royal 8vo. Pages 500. Illustrations 158 and 7 Coloured Plates. Price, 4 00 net. F. A. Davis Company, Philadelphia.

THE opening chapters of this book describe the diseases of the penis and urethra, of these the most fully treated of is gonorrhœa with its complications and sequelæ. Of the various silver salts used as injections in the early stage, albaugin is preferred. The symptoms and treatment of chronic urethritis are also very fully and clearly described. The second section includes the various inflammations of the prostate with the affections of the seminal vesicles followed by chapters on stricture and urinary fever. There is also a useful chapter on the care of urethral instruments.

The diseases of the bladder are then dealt with. In the treatment of stone, litholopaxy is

given as the operation of choice, it is, however, stated that many surgeons consider this operation as inadmissible in children under the age of sixteen, this is quite opposed to the experience of men in India. The indications for the other operations for stone are clearly given.

As regards the instruments for segregating the urine, the Harris type is the one most commonly used in America.

A good deal of space is devoted to semile hypertrophy of the prostate, the pathology is well described and there are some good plates. The operative treatment is fully discussed, and it is stated that the consensus of opinion is in favour of removing the organ through a perineal incision and without an opening into the bladder.

In the section on the kidney, the methods of diagnosis are well described, and the more recent works in this line has been included.

The section on diseases of the testicle is perhaps not quite up to the level of the rest of the book. The final chapters deal with syphilis of the various methods of treatment that byunction and that by hypodermic injection are about equal in value and much to be preferred to the internal administration of mercury alone.

The book on the whole is clear and concise, contains a large amount of recent work, and is well illustrated.

Lectures on the Diseases of the Lungs —

By J. A. LINDSAY, M.D., F.R.C.P. (Lond.), M.A., Professor of Medicine, Queen's College, Belfast, etc. Second Edition, Enlarged and Rewritten. Pages x and 508. Publishers Messrs Baillière, Tindall & Cox, Covent Garden. Price, 10s. 6d. 1906.

THE first edition of these clinical lectures by Professor Lindsay was very favourably reviewed by us a short time ago. This new, enlarged and re-written edition is so altered that it may practically be looked on as a new book. The present volume is confined to the subject of pulmonary disease, and about half the lectures it contains are new. The lectures on heart disease contained in the first edition are omitted, as it seemed to the author better to attempt to cover the field of pulmonary disease from the special point of view contemplated by him, rather than to embrace the wider field less completely. The lectures are not intended to take the place of the ordinary text-books, but are supplementary to them. The special feature of the lectures is that the clinical point of view is kept constantly in mind, and the problems discussed are considered in the manner and order, as far as possible, in which they arise in actual practice. Differential diagnosis and treatment have been very fully gone into, and the manner in which these important points have been discussed is one of the valuable assets of the work.

No one could read these lectures and not feel that they, to a very great degree, express the results of personal experience of a man emi-

nently fitted to observe and put in words the results of his observations modified by a thorough knowledge of the whole subject. We have no hesitation in recommending this new edition to students and practitioners, and have not the least doubt that it will be found to be a most useful and reliable guide in many of the thorny problems that are sure to confront them. We hope, before long, to have the pleasure of seeing Professor Lindsay's lectures on the heart appear in another volume.

Elements of Practical Medicine.—By A. H. CARTER, M.D., M.Sc., F.R.C.P. (Lond.), Professor of Medicine, University of Birmingham, etc. Ninth Edition. Pages 614 and xvi. Price, 10s. 6d. Publishers H. K. Lewis, London, 1906.

ONCE again we are glad to welcome a new edition—the ninth—of Carter's *Elements of Medicine*. It would be very interesting to get statistics of the number of medical students who begin their hospital career by making up their Carter. One thing we can confidently say that those who, on first going to attend hospital, before the systematic study of medicine begins, could not do better than obtain a copy of these *elements of practical medicine* and carefully read up the cases seen each day. It would be surprising how very soon the student, who does so, begins to follow intelligently and understand the clinical lectures and the different points of interest that crop up daily.

This new edition has been carefully revised throughout, many sections have been entirely written and a few additions have been made, whilst the original plan of the work, as an elementary introduction to the study of medicine, has been retained as closely as possible.

There is a short concise account given of most of the commoner diseases met with in the tropics, the description of malaria struck us as particularly good, and gives the student a very fair general idea of malaria from an elementary point of view. It is regarding the diagnosis of true "malarial cachexia" and the differentiation of it from the allied condition due to the Leishman-Donovan bodies that all the most recent work on this subject has been done.

We can most strongly recommend this book, both from personal experience when a student, and after perusal of the present edition, as being the best elementary introduction to medicine and hospital practice we know of.

The publishers have done their share of the work in a way that we can highly commend.

Medical Diagnosis — A Manual of Clinical Methods for Practitioners and Students. Fifth Edition, greatly Enlarged and Revised to date. By J. J. GRAHAM BROWN, M.D., F.R.C.P., F.R.S.E., and W. T. RITCHIE, M.D., F.R.C.P., F.R.S.E. With 200 Illustrations and 8 Full page Plates. Pages xvi and 508. Publishers Messrs Wm Green & Sons, 1906.

IN preparing the present edition of this valuable work on medical diagnosis every section

has been carefully revised, and in almost every case considerable additions have been made which has brought the book well into line with present knowledge. The authors have spared neither trouble nor expense in bringing the work up to date. The two hundred illustrations and eight full-page beautifully coloured plates add very considerably to the value, and will assist to a very large extent in elucidating the meaning of the text. There is a good index added, which will be found very useful for rapid reference.

We should have thought a rather fuller account of cystoscopy was called for in the present day, and we have failed to find any reference to Wright's salt content equivalent method of examining the blood and urine. The Leishman-Donovan body or its cultivation by Rogers is not mentioned, although it forms a very important item in medical diagnosis in tropical countries.

In spite of these and a few other omissions, the volume will be found an exceedingly useful book, both for the student and laboratory work, it has one great advantage over most of the recent works on the same subject, namely, in its size. It is a handy little volume and most excellently produced by the publishers.

Notes of Travel.

A Visit to the Surgical Clinic of the Brothers Mayo at Rochester, Minnesota, U.S.A.*

The surgical work of the brothers Mayo at Rochester is done in a well built and handsome building, St Mary's Hospital, furnished much in the manner of a private mansion. It has about 150 beds, practically all in separate rooms. I gathered that this hospital had been built partly from subscriptions, but was entirely a paying hospital, being managed in all its business aspects by a Roman Catholic sisterhood. I understood the Mayo brothers had no pecuniary interest in the house part of the hospital, but that they had complete control of the treatment in every way—paid for the dressings, drugs, etc., and the resident officers were practically their paid assistants. The patients paid separately for their medical or surgical treatment (practically only cases for operation were taken in), which was, I gathered, graduated according to their means and generally was an inclusive sum. Naturally the character and class of the room they selected would bear relationship to the amount of the fees charged them, reducing thus greatly the amount of inquisitorial inquiries necessary, especially in a country where outward appearance and evidence of education bear but little reference to the monetary position of the individual. The patients are admitted mostly from the "office" (so called in America) of the firm, which is situated in the centre of the town, the hospital being about a mile away on the very outskirts. These consulting rooms were quite extensive, and during consulting hours (afternoon) were a centre of great activity. I was informed that patients presented themselves at an office where various particulars of non professional character were taken down by clerks, they were given something corresponding to a history

ticket, and then they made a journey through a series of examination rooms, each of a special character. In one the urine would be examined, and, if necessary, would be separated or a cystoscopic examination made, in another X-ray photographs would be taken and so on, according to the case, every kind of special examination would be made. Finally the patient would come before one of the partners, who would complete the diagnosis and decide what treatment should be undertaken. Patients were commonly sent to hospital at that time and generally operated on the next morning. It is evident that such a system of universal specialization under one roof is the way to obtain from division of labour its best results.

At the hospital itself operations duly engaged two surgeons (usually the two brothers, but when I was there Dr W J Mayo and his chief assistant, Dr Judd) continuously from 8.15 A.M. till about 1 P.M. The same systematization was also observable in the most noticeable of the points being the regular way in which a microscopical diagnosis of tumours was made by a skilled pathologist in a laboratory adjoining the operation rooms whilst the operations were in progress. There were two operating rooms, with a sterilizing and instrument room between and connected with each. There was nothing very exceptional about these rooms, which were not very large, the furniture was not very elaborate, being mostly of white enamelled metal. Everything, however, was covered by sterilized cloths. The absence of lotions and of douches was a very noticeable point. Ablution of wounds or of the abdomen being practically never resorted to.

The surgeon and his assistants of all kinds, nurses, etc., wore masks over the head and face made of sterilized gauze, used india-rubber gloves, and, of course, the universal white overalls. They did not wear special shoe coverings.

As is practically universal in the case, a critical critic might have picked serious holes in the completeness of the aseptic technique, but doubtless, everything that matters had been provided against.

Operations are performed every week-day throughout the year. On the four days that I visited the Clinic the list amounted to thirteen or fourteen each day, of which at least ten were capital operations, and not more than two or three such minor operations as perineorrhaphy, removal of sequestra, or circumcision. The great majority were major abdominal or pelvic operations. Perhaps two or three of the operations were postponed for want of time, but it was easy to see that the year's list would amount to close on 3,000 important operations which the annual report of the hospital claims. Dr W J Mayo appears to be especially fond of gall bladder, stomach, and female pelvic surgery. The other brother, Dr Charles Mayo, who was on a holiday, I gathered, took greater interest in more general surgical work.

During the week I was there, there was an average attendance of quite forty medical men. I was told this was not at all unusual, as there is a continuous procession of men staying four or five days, or a week, and others then taking their place. The courtesy extended to visitors by Dr Mayo was much beyond what could possibly be expected, and the British surgeons who had come on after the Toronto meeting were made especially welcome. Dr W J Mayo has a very incisive and interesting way of imparting information, and continually laid down his views on many surgical matters in a forceful yet by no means egotistical fashion. We gathered that his views on many matters, especially on operating in cases of malignant diseases, were far more conservative than would have been expected.

Another detail that gave rise to a astonishing comment by everybody who had followed the work for several days was the extraordinarily successful way in which ether was given. The anaesthetists were two ladies of middle age, who, we gathered, had devoted their lives to this work, but were not trained in medicine—and

* Being an extract from notes printed for private circulation by Major A H Nott, M.B., F.R.S.

extraordinary circumstance, but still, from a surgeon's point of view, the anaesthetic could not have been better given, the absence of struggling, and also the absence of any alarming symptoms, was remarkable. I doubt, however, whether the hospital authorities in London would quite approve of the method on account of its cost. The method used was the drop open method on to a large mask, in principle the same as Esmarch's chloroform mask. A twig of gauze was inserted into a groove in the cork of an ordinary one pound tin of ether, and by this a constant dropping of ether, on to the outside of the mask was effected. Inquiries brought out that by this method nearly three times as much ether was expended as in the apparatus usually used. One of these ladies had given ether to close on 20,000 patients without a death. One of the Roman Catholic sisters was Dr Mayo's chief assistant. She had assisted him at every operation for years.

To give an idea of the daily work performed I will transcribe notes made during the four days I visited this Clinic in the first week in September 1906. On September 5th the operations lasted from 8.15 A.M. till after 1 P.M., but at that hour the list had not been completed and one or two were postponed to the next day, and this was about the experience every day.

1 To commence with, on September 5th I saw a case of appendectomy for ordinary recurrent chronic appendicitis. The proceeding was identical practically with the operation as I saw it later performed at other American Clinics, there apparently being little difference now in technique anywhere. A gridiron incision was made in the flank as usual, and the operation was continued by the separation of the appendix by ligaturing the appendical mesentery with catgut, crushing the stump with one pair of forceps, removal of appendix between that and another pair of forceps. It was completed by the invagination of the mucous membrane by means of a little metal rod and a purse string suture of catgut. A special reinforcement of this suture was made by reduplication at the seat of mesenteric attachment. The invaginated part was further drawn together by an outer row of Lambert's sutures.

During the morning, I also saw two or three other appendices removed incidental to other abdominal operations. Dr W. J. Mayo did not go quite to the extent that is urged by some, *viz.*, to remove the appendix in every case in which the abdomen is opened, whether the appendix is diseased or not, on the ground that it is useless and may become troublesome, and that little additional risk is incurred. He, however, removes the appendix in all cases where there is any chance of that organ coming into contact with any portion of the abdominal cavity interfered with during the course of the operation, such as in operations for ovarian tumours or pelvic inflammation on the right side, he also removes it if he sees the slightest deviation from the normal in the appendix, or if there has in the history been anything which gives rise to suspicion that there had, at some previous time, been trouble in connection with it. As a matter of fact it was removed in most cases in which the abdomen was opened for pelvic trouble, both in this Clinic and others I visited later.

2 The next case seen was one of gastro jejunostomy for pyloric obstruction due to malignant disease of pylorus or duodenum. A double clamp was used for the stomach and intestine, bringing portions of both nicely into apposition for the suturing, *viz.* it was an instrument with three arms. The posterior operation was performed and union was effected by sutures, Pagenstecher's linen (cellulose) thread being used. Dr Mayo pointed out certain vessels in the gastro colic omentum which served as a safe guide between which to penetrate in order to reach in safety the posterior surface of the stomach.

3 A cyst of the broad ligament of large size, nearly filling the abdomen, in a woman forty eight years of age. There was free fluid also in the peritoneal cavity, hence malignancy was suspected, and the patient was

therefore kept on the flat, and not raised, as usual, into the Trendelenburg position. The tumour was removed from the abdomen by an unusually large incision and only punctured outside the abdomen. The pedicle was ligatured with strong catgut and the tumour handed over to the pathologist for examination. By the time that the pedicle had been secured, and the appendix removed, the pathologist returned and reported there were signs of malignancy in the tumour. Dr Mayo then proceeded to remove the remaining ovary and to perform a supra vaginal hysterectomy. He said that this should be done in all cases of ovarian cancer, but that it was not necessary to remove the cervix, which was hardly ever involved, he said that ovarian cancer passed from one ovary to the other and then to the uterus. During the process of covering up the stump with peritoneum he secured the round ligaments to the stump of the cervix, in order to give a support to the floor of the pelvis.

From remarks made during this operation, it appeared that it was the practice in cases of this kind not to keep the patients lying still on their backs for many days, it is the practice to slightly raise such cases as this in bed from the first, the next day to allow them, if wished for, to change from side to side, and in a very few days they are propped up to the sitting position in bed—in fact, it is believed that the risks of keeping patients, especially rather elderly ones, lying flat on their backs are greater than the dangers likely to arise from traction on the severed and unhealed tissues. Thus appendix cases are made to walk about at the ninth or tenth day. He also instanced, as an argument in favour of this view, that phlebitis, occurring after pelvic operations, was due to the length of stay in bed, and not to inflammatory causes in extension from the wound, since it, he said generally occurs in the left extremity after right side operations.

4 A case of retroflexion of the uterus with a torn perineum accompanied by old standing adhesions from pelvic inflammation.

He started by repairing the perineum, as far as I could make out, in the fashion of Lawson Tait, but two very deep muscular catgut sutures were used, being buried. He finished this part of the operation by making what he called an artificial hymen, this was for the purpose of preventing the urine soaking into the line of sutures, and would allow the use of the catheter to be abandoned very early. The abdomen was then opened, considerable adhesions were found, which was separated, and then the operation, which in America is called an internal Alexander, was performed. The internal Alexander operation for retroflexion or prolapse of the uterus seems to be the favourite treatment for this condition in America, it varies in details in different hands, and does not always go by this name. It is evident that at the present day there is a radical difference in the treatment of these conditions on the different sides of the Atlantic. The discussion on Dr Giles' paper on ventrofixation of the uterus at Toronto showed this divergence very markedly. Dr Mayo—and he apparently voices the general trend of opinion in the United States—believes neither in ventro suspension, nor ventrofixation. He considers they are altogether too artificial and opposed to the natural processes of suspension of the uterus. He, with most American surgeons, believes that Alexander's principle was right, though the method Alexander advocated of carrying out his principle is unsatisfactory and uncertain. American surgeons prefer, therefore, to shorten the round ligaments under inspection inside the abdomen. This was first attempted by the simple plan of practically tying a bow knot, but the operation which Mayo performs was devised to follow more closely the principle advocated by Alexander. The operation as I saw it performed was to separate the peritoneum from the posterior sheath of the rectus on either side for about 2 inches with the end of a rather fine pair of dressing forceps, to pass these dressing forceps through the

peritoneum in the neighbourhood of the internal ring, to seize the round ligaments about $1\frac{1}{2}$ inches external to the uterus, and to bring the doubled ligaments through the openings in the peritoneum and suture them together across the middle line. In another case, on a subsequent day, the round ligaments being shorter, they were sutured to the tissues and not brought across to the middle line.

In this case, as in most abdominal sections, he anchored the bladder below the line of incision, as he says that union of the bladder to the cicatrix is one of the causes of the chronic, very distressing, urinary trouble after abdominal section, which tends to give a bad name to surgical enterprise.

5 The next case was an anterior gastro jejunostomy for tumour of the pylorus causing obstruction. There was a doubt as to the nature of the tumour. When the abdomen was opened Dr Mayo considered it to be malignant, but the pathologist, to whom a small snip was given, did not confirm this, but Dr Mayo preferred to trust to naked eye appearances, believing that he had not removed a portion of the tumour itself. He performed an anterior junction in this case, because the extensive adhesion prevented the stomach being satisfactorily drawn out of the abdomen and further he feared to cause, for the same reason, hæmorrhage in performing the gastro colic omentum. For the connection he used McGraw's ligature of which I had previously not heard, it is simply an indiarubber tube about the size of a feeding bottle tube, but more solid. The intestine was roughly sutured to the stomach by a posterior half circle, the tube threaded to a needle passed in and out, first through the intestine and then through the stomach and back again, and tied tightly when on the stretch. The knot is secured by a treble silk ligature and tied, and the ends of the tube cut off close. The posterior half circle of silk is then continued round. It was said the ligature would make its way through and pass out by the intestine. Its advantage over Murphy's button is that there is no danger of its passing into the stomach, instead of into the intestine, and remaining there, and the operation is an easier and quicker one than union by sutures sufficiently accurately to at once prevent leakage. It is evident that until separation of the sphacelated part of the stomach takes place that complete obstruction remains, but it is said this lasts for two days at the most, and in most cases little harm is done by even a much longer abstention from feeding by the mouth.

6 This case was followed by an abdominal removal of an extensive malignant disease of the upper third of rectum and sigmoid flexure in a man of about 60 years of age. The ordinary central incision was made and the liver examined for presence of secondary nodules. Such not being found, the growth was extirpated in an extremely bold manner. To an onlooker it appeared to be working very much in the dark, and hence highly dangerous, but the success was complete, scissors were used to remove the intestine with the growth, the intestine being of course clamped off above and below, but arteries were clamped as the incisions progressed. The diseased part having been removed, a flap incision of considerable size was made through the left lateral abdominal wall. The upper incised end of the gut, after being closed carefully, was brought through this incision and sutured in and left for subsequent opening out. The lower end was treated with the actual cautery, was deeply invaginated, and drained from the rectum, the peritoneal covering being closed from above after the invagination. On enquiry before leaving on the Saturday, it was stated this patient was doing very well.

A similar number of operations of only a degree less importance were simultaneously performed in the second operating room.

September 6th.—The operations performed this day were, on the whole, of greater importance, and showed Dr Mayo's great manipulative skill and resourceful

rapidity perhaps more markedly than on the other days, the gall bladder and stomach operations being exceedingly brilliantly performed.

1 Cholecystectomy. Case diagnosed as gall stones and probable appendicitis. An incision was made at edge of rectus, rather lower down than the usual incision for gall bladder operation, through this the appendix was examined and found healthy. This incision I saw made several times later, as it was recognized that mistakes of diagnosis are not uncommon, either that of mistaking gall-bladder trouble for appendix trouble or vice versa, especially when relying on a history alone.

At the operation, several gall-stones were found in the gall bladder, and were removed by a special long scoop, but one was found in the duct of the gall bladder and could not be brought into the bladder. Cholecystectomy was therefore performed. In closing the wound the omentum and colon were brought into place to keep the small intestines from coming into contact with the seat of operation, and, further, a double piece of gutta-percha tissue was lightly sutured to the skin and tissues to prevent the adhesion of these to the area denuded of peritoneum. A gutta percha and gauze (cigarette) drain was used.

2 Another Cholecystectomy. In this case the gall-bladder was distended to about the size and shape of a sausage. One stone was implanted in the cystic duct. It was evident that the operator favoured cholecystectomy instead of cholecystotomy where there was any risk of bruising tissues in removing the contents of the gall-bladder or ducts.

3 The next case was one for a persisting sinus after an operation, by another surgeon, for gall stones, two years before. He stated that these cases of persisting sinus usually meant that a gall stone had been left behind and, that, where the discharge consisted solely of mucus or muco pus, it meant that the calculus was in the gall duct and not in the common duct, in which latter case it would contain bile.

At the operation, a vertical incision in the usual site (outer edge of right rectus) was made, although at the previous operation the incision had been a very large oblique one. The sinus was completely dissected out and the remains of the gall bladder removed (cholecystectomy). A calculus was found imbedded in the duct in the midst of cicatricial tissue.

4 A Large Ovarian Cyst. A very large incision was made to evacuate the tumour without reducing its volume. The pathologist declared it to be non malignant. Great interest attached to the unexpected discovery that the uterus was a well-marked bifid one. The tumour arose from the ovary connected with the left uterus.

The appendix was removed in this case, although it showed little apparent signs of disease.

5 Gastrectomy. This was, I think, the most brilliant operation that I saw, both from its magnitude and on account of the wonderful manipulative skill shown. The control of hæmorrhage, indicating extreme familiarity with the blood supply of the stomach, was masterful in the extreme.

The operation was done on a woman of 41 years of age for malignant disease of pylorus. The first step was to control the blood supply, which, as stated, was done with extraordinary precision and despatch, the duodenum was then separated, then the pylorus, with rather more than one half of the stomach, was removed. The upper half of the stomach was controlled by special large clamps, one large clamp was applied from below, extending right across the stomach, and a second smaller one to reinforce the first clamp was also applied from above at the lesser curvature, which part was said to be likely to slip from a single clamp. The direction of the incision was oblique, removing more from the lesser than the greater curvature. The clamps were covered with indiarubber tubing. The actual cautery was used to the severed mucous membrane before the clamps

were removed. The stomach was closed by what is now generally known in America as Mayo's suture, a very clever yet simple device for inverting and tightly closing two cut edges of this nature. It is difficult to give a description of this suture which can be followed, it is a continuous suture which, with but very little assistance with instruments, turns in and firmly closes a great length by simply pulling on it, it is really, however, a continuous suture on the principle of Lembert, the double insertion beneath the sero muscular coat being made parallel to the cut edges alternately. The operation, of course, was completed with a gas-ro-enterectomy, which was performed with sutures. The patient was under the anesthetic less than an hour.

6 The last operation I saw that day was for cancer of the cervix uteri. The patient had been prepared for vaginal hysterectomy, but after final examination, Dr Mayo decided not to perform it, as he said he could not get beyond the disease. He curetted the growth and cauterized it most freely, indeed to the onlooker it appeared that the succeeding sloughs must open up the bladder. He stated he was not much of a believer in extensive operations for uterine cancer, and spoke sarcastically of Wertheim's and other similar operations, based on the complete removal of pelvic glands. He based these views on the assertion that recurrence took place through extension around the ureters, and that infection, or rather recurrence, in the glands took place later. He said the proper treatment would be trans-plantation of the ureters into the bladder or rectum, but results had been unsatisfactory.

twice daily by the mouth and alternate cases by injection. I began by injecting small doses of gr. iii to v, but soon increased them, and latterly always gave gr. v. 43 per cent of the injections were gr. iii to v and 57 per cent were gr. v. Each case received only one injection a day. A few received a certain amount of quinine by the mouth as well. I thus got 36 cases treated by the mouth alone and 38 treated almost entirely by injection. The average number of days of fever after commencement of treatment was in those dosed by the mouth 2.39 and in those injected 2.37, giving a ratio of 99 to 100 in favour of injection.

I give this result for what it is worth. Only a few of the cases were microscopically proved to have malaria. The others were diagnosed as malaria by clinical signs, several doubtful cases being eliminated. The season was August and September in a malarious year. The dosage in the two sets of cases, also, is hardly comparable. It has recently been shown that quinine is very slowly absorbed from the tissues, so that very much larger doses than gr. v could probably be injected safely, and possibly much larger doses than are ever given by mouth. With such doses the injection might have shown very much better results.

This slowness of absorption probably accounts for injection having proved of no special value in the treatment of cases of acute malarial fever. The same property, however, of slow and steady absorption may well render injection of greater use as a preventative, than small doses of quinine by the mouth often taken spasmodically by a forgetful patient.

I may conclude by remarking that the planters of Cachar very much favour the injection treatment of malaria and place unbounded faith in it.

Yours, etc.,

SUCHAR,) L. B. SCOTT, M.D., D.I.H.,
28th January 1907) Captain, I.M.S.

THE HYPODERMIC USE OF QUININE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In the *I. M. G.* of December 1906, there is a notice of a meeting of the Medical Section of the Asiatic Society of Bengal at which, following Captain Megaw's paper, since published in last month's *I. M. G.*, there was a discussion regarding the use of quinine in malarial fever and in particular the hypodermic use of quinine.

I, for one, wish that you had published fuller details of the discussion.

Some years ago I used quinine sulphate hypodermically dissolved with tartaric acid in several cases, but in two instances abscess resulted, and this, in spite of extra careful measures to render the injection sterile. One of these cases was that of a debilitated subject already suffering from abscesses. I know of not a few cases of abscess and sloughing having followed hypodermic injection of quinine sulphate in the practice of others. Such cases are not often published. I came to the conclusion that the irritation caused by the quinine sulphate may be the determining factor in the causation of abscess, and that it may even cause sloughing though the injection be sterile. Recently, I have had to treat a case of malaria in an infant under one year of age by hypodermic injections of quinine the giving of the drug by the mouth or rectum being contraindicated.

From July to November 1906, this infant had four attacks of malarial fever. After the third attack the spleen was considerably enlarged. Quinine was given during and between the attacks, a total of four or five days, the effect of the injections was therefore not given to begin with was gr. i, and recurrence. The dose was gr. i, and these doses were given daily, both during and for 14 days after each attack, and then on two consecutive days every week.

After the third attack quinine was given internally in doses of 2 grains of the acid hydrobromide daily and sometimes twice daily. My experience of the various quinine salts I used hypodermically was as follows—

1 Hydrobromide. Solubility 1 in 24 of water. Moderately irritating and not sufficiently soluble. I used tablets which dissolved with difficulty in hot water and became precipitated again as the fluid cooled.

2 Acid hydrochloride. Solubility 1 in 6 of water. I only used this salt once, as it caused much irritation that persisted for a long time. I also injected it into my own arm, and found it painful and irritating.

3 Hydrochloro carbamide or urea quinine. Very soluble and unirritating.

4 Acid hydrobromide. Solubility 1 in 6 of water. I found this the least irritating of the salts I used. I made an injection into my own thigh, and next day could scarcely find the place without looking for the puncture mark.

This quinine salt is quoted in few of the catalogues of drugs that I have seen. I found it described in "The Extra-

Correspondence.

THE HYPODERMIC USE OF QUININE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In reply to R. S.'s query in the correspondence column of the January number, the form in which quinine is most usually given hypodermically or rather intramuscularly is, I suppose, the quinine hydrochloridum acidum of the B. P. dissolved in distilled water to the strength of 1 in 1 or 1 in 2.

I use the former strength, i.e., equal parts of quinine and water. My usual dose of gr. v can then be contained in the full barrel of an ordinary 20 mm. hypodermic syringe.

I have also used quinine sulphate extensively for injection and found it perfectly satisfactory. I have thought that it caused more after-pain than the acid hydrochloride, but could not be sure of this. I dissolve it with tartaric acid. By warming in a test tube gr. v of quin. sulph. can be dissolved by gr. iii of tartaric acid in m. 20 of water. Grains 5 of tartaric acid should be used if the solution is to be 'cent' at all, otherwise the quinine will be precipitated. moves on will not keep so longest deviation from the

ker. In the appendix, as that of the acid hydrochloride anyhow. Of the sulphate, I always use a 1 in 3 solution and fill the barrel of the syringe twice without removing the needle from the gluteal muscles.

Several cases of tetanus have occurred from injection of quinine, and absolute asepsis is essential. A boon to tropical practitioners would be a small pocket case on the lines of B. W. & Co.'s urine testing pocket case, containing a spirit lamp, a small vessel for heating oil on a stand over the lamp and just large enough to take an intramuscular needle. Another small vessel with a handle and flat bottom for boiling the quinine solution, a hypodermic syringe (all metal), a pair of forceps for taking the needle out of the hot oil, and three bottles to contain quinine solution (or solids), castor oil for heating and solution for sterilizing the skin. The oil for heating is sterilized by drawing the hot oil up into it three or four times. The oil is at the right temperature when a blade of grass fizzes the moment it touches its surface. I use an improvised case containing these things in a tobacco tin.

I consider that the intramuscular administration of quinine is of most use as a preventative of frequently recurring ague attacks, or to obviate relapse after the cure of an attack of malarial fever. I have known it put a stop to recurrent ague attacks, where dosage by the mouth had failed. I have not found it of special advantage in curing malarial fever. I once took 74 successive cases of sepoys coming to a regimental hospital with fever. Alternate cases I treated with gr. v

Pharmacopœia," Tenth Edition Treacher & Co obtained it for me with some difficulty

If a solution is made of strength 1 grain quinine hydrobrom acid to 7½ minims of water, the excess of water allows of thorough sterilization by boiling without the risk of the salt becoming precipitated. Contrary to what one would expect, quinine is more easily given to an infant hypodermically than by the mouth, at least such was my experience when using the acid hydrobromide or urea quinine. For infants the needle should be sharp and of small calibre and the syringe should have finger grips. I found the fine Schimmel needles sold by Parke, Davis & Co., very convenient.

Till recently I was under the impression that hypodermic injection is, next to intravenous injection, the most rapid way of getting quinine into the circulation, but recent observations show that this is at least improbable. With hypodermic injection, as compared with internal administration, the longer the continuance of the fever, the comparative absence of cinchonism, the slow excretion of quinine² and the not infrequent persistence of irritation at the seat of inoculation all these favour the view that quinine is absorbed slowly when given hypodermically.

Further knowledge about this important matter is much needed, for if this recent view is correct, the giving of quinine hypodermically will only be indicated when its exhibition by the mouth is contra indicated or in cases of severity when the two methods might be combined, as suggested by Captain Megaw. Though I have nothing new to communicate, I was prompted to give my views by the letter signed "R S" in last month's *I M G*, and by the fact that when I myself wanted detailed information about the various quinine salts, I had difficulty in finding it. The text-books give few details, and in all of them that I have read, it is assumed that quinine, when given hypodermically, is rapidly absorbed.

Again, the dosage and method of giving quinine to infants and children is not satisfactorily dealt with in most text-books.

One reads of palatable and "elegant" preparations of quinine for children, but when it comes to getting the dose inside the child, it is the reverse of palatable, and after a scene painful alike to child, mother and doctor, it is difficult to say how much has gone down. Holt³ writes that relatively much larger doses of quinine are required for children than for adults, and that an infant of a year will usually require from 8 to 12 grains of the sulphate or 10 to 14 grains of the bisulphate daily. He occasionally gives double this quantity.

Yours, etc,

W E S MONCRIEFF,
Major, *I M S*

UDAIPUR,
30th January 1907 }

THE HYPODERMIC USE OF QUININE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In October last I consulted Sir Patrick Manson in London as I could not get rid of my fever. He advised a hypodermic of acid bichloride of quinine gr. x in the gluteal muscles every night for a week and effervescent tabloids of mag. sulph. every morning. I did this and have only had one slight attack since. The advantage of this preparation is that a considerable dose of the drug can be given in a small amount of water as it is soluble in its own weight. The injections were given with a small hypodermic syringe with a solid glass piston and did not amount to more than m. xv each. I used distilled water and boiled it immediately before use. I felt a little stiffness for about a fortnight afterwards, but nothing more.

Five years ago on my way to England Lt. Col. J. Smythe, *I M S*, gave me about 8 injections of the sulphate gr. v dissolved in hot water in the subcutaneous tissue of the back of the arms. This cured my fever, but I had pain at the seat of inoculation for about two months.

Yours, etc,

J NIELD COOK

CALCUTTA

THE HYPODERMIC USE OF QUININE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In reply to "R S" I would say that the ordinary sulphate of quinine can be dissolved fairly readily by adding half its weight of Tartaric acid and making it up with distilled warm water, four or five minims of water are required to dissolve every grain of the sulphate. Unless the water is distilled, it is often very difficult to obtain solution.

A far better salt is the bichloride, of which one grain will dissolve in less than a minim of water if the salt be a

good preparation. I find some samples dissolve badly, but Burroughs and Wellcome's I have found very satisfactory. My usual prescription is—

R Quinin Bihydrochlor Grains 100
Aq. Distil. id Minims 100
Sig Ten to fifteen drops to be injected

It must be injected into a big muscle, *e.g.*, biceps or gluteus, and the utmost care taken in sterilizing syringe and cleansing skin as otherwise troublesome abscesses may result. A good method is to draw up the syringe with boiling olive oil or vaseline which may be conveniently kept in a 3 anna aluminium finger bowl and heated by spirit lamp, as in the sets sold for a rupee by the Plague Laboratory in Bombay. The temperature of boiling oil being much higher than water readily disinfects the syringe and needle.

The fear which may entertain of tetanus is, I think, a confession of inability to properly sterilize the instrument and skin. If the solution is boiled for a second in a small test tube just before using, and the small vessel into which it is poured is sterilized by the spirit lamp flame, and the syringe, needle and skin are properly dealt with as mentioned, there is no risk of such accidents. In many hundreds of intra-muscular injections of quinine, I have personally given, I do not remember to have yet seen any case where even an abscess resulted, but I have seen many when it was entrusted to a careless assistant.

I find Allen and Hanbury's "Aseptic slab" 1s. 6d. invaluable for any such hypodermic administrations, as the depressions are easily sterilized by the flame and all measuring saved as they accurately hold 5 and 60 m. respectively, and hold the syringe upright while skin is being purified, etc.

Yours faithfully,

J RUTTER-WILLIAMSON,
M.D., etc

ROBERT BARBOUR MEMORIAL HOSPITAL,
Bhandara, C.P.

THE MANUAL OF ASEPTIC SURGERY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I beg to thank you for your courtesy in enabling me to answer your reviewer's reply to my letter of once. Firstly, I regret that what was evidently a printer's error should have given rise to a misconception on my part.

Secondly, with regard to my "obvious" inference, and the error into which I have fallen thereby, I think we are here at cross purposes. Your reviewer is perfectly right in thinking that I consider a rinse with antiseptic lotion between two dressings sufficient, with the important proviso that—the directions given above on the same page are complied with. They are that the instruments and not the fingers are used to touch septic matter, and if the fingers do touch it they should be immediately rinsed and rubbed in strong antiseptic lotion. He is equally wrong if he thinks that I consider a rinse with antiseptic lotion between two dressings sufficient—to sterilize the hands, and if his remark about the trouble of disabusing students, etc., does not carry this meaning, as its natural corollary, then I confess I do not understand its gist.

He answers my question with an implied affirmative and the suggestion of a more pertinent one, and this leads to a yet more pertinent query still, viz., what method does he rely on for the sterilization of the hands, which is efficacious and can at the same time be repeatedly applied with impunity and without damage to the skin. The second condition is as important as the first, or otherwise it will defeat its own on subsequent occasions.

Lastly I gather that the charge of inconsistency with regard to the use of iodoform is based on the premise that the treatment of chronic and psoriasis abscesses by incision and scraping, leaves an "aseptic" wound. This conception is certainly a revelation to me. If the abscess is small and consequently thoroughly accessible, I can conceive the possibility of the practical asepsis of the resulting wound, but in such a case I am glad to see we are both agreed it is best to excise it entire. Psoas abscess or other extensive chronic abscess cannot by any stretch of the imagination be safely included in this category, and I am content to appeal in consistent in consistency.

Yours, etc,

RANCHI

E A R NEWMAN,
Major, *I M S*

SOME HOSPITAL CASES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Would you please publish the following cases in your paper as they might be of some interest—

I SIMPLE FRACTURE OF THE SPINE OF SCAPULA

I believe this is a very rare fracture and is at least the first I have ever seen. On the 9th of December 1906 a male child

¹ *I M G* January 1907

² *Ibid.*, and *I M G*, October 1906, p. 422

³ "Diseases of Infancy and Childhood," Holt

of about 5 years was brought to me in the out-door with the complaint, that he has got pain in his right shoulder. On examination I suspected a fracture but was not sure though I could make out the crepitus distinctly, as I had never seen the like before. On the arrival of the Civil Surgeon the case was put before him and after a careful examination the diagnosis was confirmed. The fracture appeared to have been situated near the junction of the spine with the spinous process of the scapula. The history given was that the child, while playing on the bed, fell down from it on his back and soon after the fall complained of pain in his shoulder. A shoulder cap was applied, and the father of the child was asked to stop in the hospital, to which he did not agree. Now and then he attends the out-door.

II SNEEZING

Would any of your innumerable readers very kindly make the phenomena of *sneezing* clearer to me. I have consulted nearly all the books I could get on the subject, but still remain in the dark about it. I have got a patient in my ward, Garib by name, a Mahomedan male, about 30 years of age. The complaint he came in and treated for is granular lids, with very thickened lids, watering and photophobia being very troublesome. He was treated for this ailment with tannic acid and glycerine, caustic touch (urgent nitras solution 10 and 20 gr to 31) and his eyes have improved considerably. Whenever the medicine is applied to his lids and he is made to lift up his chin or head, he gets a fit of constant sneezing—which becomes another ailment to him—irrespective of the presence or absence of light. I shall be highly obliged to one who will take a little interest in solving this problem for me.

PRIIDHIT

Yours, etc,
SHEO BARAN SINGH,
Asst Surgeon, Dt Hospital

Service Notes

THE SERVICES IN 1906

THE year 1906 has not been an eventful one for the Medical Services. Throughout the year, except for some desultory fighting in Nigeria, the Empire has been at peace.

During the year, promotion in both the I M S and the R A M C has been slow. In the latter, one Colonel became a Surgeon General, and five Lieutenant-Colonels were promoted to Colonel, in one case the promotion being a special one, for professional merit. Several Lieutenant-Colonels have also been specially promoted to the selected list, no doubt with good

reason. At the same time, such special promotions come hard on the average men who stand next for selection. Promotion by selection must, however, always involve a certain amount of hardship, or we might say of bad luck, to the average individual. In the Bengal and Bombay services no promotions to the administrative grade took place, the one vacancy which occurred in Bengal being absorbed. But Madras got two much needed steps, the officers promoted having each well over thirty years' service, and promotion in the Madras Service having lagged considerably behind the rate of advancement in Bengal and Bombay. The special accelerated promotions to Major, for having taken advanced degrees since entering the Army, show some curious results.

The number of deaths of officers on the active list was not large, seven in the R A M C, two in Bengal (both in England), two in Madras, none in Bombay, and three in the junior I M S. Under this heading we must note with special regret the death from sleeping sickness of Lieutenant F M G Tulloch, who fell a victim to scientific research.

It is curious to note how, in the I M S, retirement at 25 years, for long the most popular date for leaving the service, has almost entirely ceased. Only two officers in Bengal, and one each in Bombay and Madras, took the twenty-five year pension. The extra pension for the year 1905-06, in the Bombay Service, actually lapsed for want of applicants, and one of the two available for Bengal in 1906-07 seems likely to do the same.

The list of officers on the retired list, who have joined the majority during the year, contains several well known names. In the R A M C, D S G Tulloch (the father of Lieutenant Tulloch), and Webb, also Sir Halliday Macartney, of China fame, who left the Army Medical Department as an Assistant Surgeon. In Bengal, Deputy Surgeon Generals J P Walker and E Tylor, Surgeon Majors T E Charles and Sir Joseph Ewart, both well known Calcutta medical officers, and Lieutenant-Colonel A. Crombie, a leading Calcutta light of a later generation. In Madras, Surgeon Generals C Sibthorpe and W F de Fabek, the latter a Crimean veteran, and in Bombay Surgeon General J Lumsdaine and Lieutenant-Colonel H W Boyd, the latter within a month of his retirement, and before he had left Bombay.

The Honours granted during the year were few. Sir Alfred Keogh, the Director General of the R A M C, became a K C B, as also did Sir J Donnelly, late of the Madras Service, and Sir Richard Charles received the K C V O for his services as Surgeon to the Prince of Wales during his tour in India. Lieutenant-Colonel Prain received a C I E, and also became Director of the Royal Botanical Gardens at Kew, while Sir George Robertson, of Chitral, succeeded in getting a seat in Parliament at his third attempt.

The I M S on 1st January 1907 was 740 strong, of these 390 belonged to the three older services, and 350 to the new Indian Medical Service.

I—BENGAL

A—DEATHS

No	Rank	Name	Date	REMARKS
1	Major	H W Elphick	20th May	Rugby (T H P, 6th March 1905) London
2	"	J S S Lumsden	16th March	

B—RETIREMENTS

1	Colonel	S H Browne	29th April	(Extra pension) (Died 17th September)
2	Lieutenant Colonel	W A Mawson	14th July	
3	"	R. Cobb	10th October	
4	"	L A Waddell	21st October	
5	"	H C Banerjee	1st February	
6	"	D Prain	31st July	

C—PROMOTIONS—Nil

D—HONOURS

No	Rank	Name	Honour	Date	REMARKS
1	Surgn Genl	L D Spencer	K H S	27th January	V Charles D
2	Colonel	H McKay	C B	29th June	
3	Lt Colonel	K McLeod	K H P	2nd May	
4	"	R H Charles	K C V O	19th March	
5	"	R Shore	K I H (1 Cl)	1st January	
6	"	D Prain	C I E	29th June	

I — BENGAL — (Concl'd)
E — DEATHS OF RETIRED OFFICERS

No	Rank	Name	Date	REMARKS
1	D S G	J P Walker	14th February	Olaeton on Sea
2	"	E Taylor	26th July	Stevenage, Herts
3	B S	T Ringer	12th June	Cheltenham
4	B S Lt Col	G Massy	14th May	Bath
5	"	A Crombie	29th September	King Edward's Hospital, London
6	Surgn Major	Sir J Ewart	9th January	Brighton
7	"	A Young	27th March	Tasmania
8	"	T E Charles	2nd March	Flushing, Cornwall.
9	Lt Colonel	E Palmer	23rd July	—
10	"	H C Banerjee	17th September	—
11	Surgeon	A Thom	16th January	Edinburgh

II — MADRAS

A — DEATHS

No	Rank	Name	Date	REMARKS
1	Lieutenant Colonel	H M Hakim	17th May	Tanjore
2	Major	D Simpson	19th March	Madras, liver abscess

B — RETIREMENTS

1	Colonel	A F Dobson	28th May	(Extra pension)
2	Lieutenant-Colonel	J Mutland	1st April	
3	"	G M McKee	14th March	
4	Major	J O Pinto	31st March	

C — PROMOTIONS

No	Old Rank	Name	New Rank	Date	REMARKS
1	Lieut Colonel	W G King	Colonel	29th April	v Browne (B) R
2	"	W O'Hara	"	28th May	v Dobson, R

D — HONOURS

No	Rank	Name	Honour	Date	REMARKS
1	S M G	J M Donnelly	K C B	29th June	
2	S G	W R Browne	C I E	1st January	
3	Major	R Ross	LLD, Ab	27th September	

E — DEATHS OF RETIRED OFFICERS

No	Rank	Name	Date	REMARKS
1	S G	W Williamson	17th September	Boscombe
2	"	W F de Fabeck	18th January	London
3	"	C Sibthorpe	4th May	Dublin
4	Surgn Colonel	D F Bateman	23rd April	Ealing
5	B S	G D Riddell	1st December	London
6	Surgn Major	F R Divecha	11th June	Chinchpoogly
7	Surgeon	J Macdonald	20th September	Aberdeen
8	Asst Surgeon	J Welsh	11th May	Kinghorn, Fife

III — BOMBAY

A — DEATHS—Nil

B — RETIREMENTS

No	Rank	Name	Date	REMARKS
1	Colonel	T S Weir	10th July 1905	
2	Lieutenant-Colonel	H W Boyd	30th June	(Died 16th July)
3	"	K A Dalal	3rd January	
4	"	J W T Anderson	15th April	(Extra pension)

III—BOMBAY—(Concl'd)

C—PROMOTIONS—Nil

D—HONOURS—Nil

E—DEATHS OF RETIRED OFFICERS

No	Rank	Name	Date	REMARKS
1	S G	J Lumsdaine	11th March	Weston super mare
2	S M	F H Plumptre	17th April	Newton Abbot, Devon
3	"	R. C Thorp	11th August	Sydney, New South Wales
4	Lieutenant Colonel	H W Boyd	18th July	Bombay, cholera
5	"	G E E Burroughes	1st October	

IV—I M S

A—DEATHS

No	Rank	Name	Date	REMARKS
1	Captain	G C I Robertson	11th April	(T H P 17 Sept 1905)
2	"	A F Pilkington	14th September	Shahpur, heart failure
3	"	L P Farrell	12th September	Sitara

B—RETIREMENTS

1	Captain	S R Douglas	15th September 1905	On T H P
2	"	G H L Whale	30th November	
3	"	L Rundall	15th August	On T H P

V—R A M C

A—DEATHS

No	Rank	Name	Date	REMARKS
1	Colonel	W F Saunders	17th July	Poona
2	Lieutenant Colonel	H W Hubbard	25th January	Grindswald
3	"	C R Bartlett	5th December	Free Town, Sierra Leone
4	Major	T Birch	19th September	Reading, bicycle accident
5	Lieutenant	F M G Tulloch	20th June	Millbank, Military Hospital, London of sleeping sickness, contracted in Uganda
6	"	G S Mackay	22nd February	Middleburg, Transvaal
7	"	W H Hills	23rd June	Cawnpore, cholera

B—RETIREMENTS

1	S G	W H Macnamara	29th June	
2	"	J A Clery	21st December	(T H P 29th December 1905)
3	Colonel	B M Blennerhassett	4th April	
4	"	J L Routh	8th January	On T H P
5	Surgeon Colonel	E N Sheldrake	23rd May	Grenadier Guards
6	"	H Rayner	17th February	Royal Horse Guards
7	Lieutenant Colonel	J W H Flanagan	20th January	
8	"	J Kearney	14th March	
9	"	T H Corkery	6th June	
10	"	W T Johnston	4th July	
11	"	J M Nicolls	14th July	
12	"	W J Macnamara	11th July	
13	"	P H Johnston	13th July	
14	"	C I W Tatham	11th August	
15	"	W B Pinches	25th August	
16	"	M J Whitty	25th August	
17	"	W S Dowman	25th August	
18	"	R F O'Brien	12th September	
19	"	A V Lane	15th September	
20	"	J Macconachie	10th October	(T H P 11th October 1904)
21	"	H C Kirkpatrick	8th October	
22	"	A Hovis	13th October	
23	"	E Davis	24th November	
24	"	C Garner	5th December	
25	Major	J G Black	30th January	
26	"	W P Squire	30th January	(Died 23rd May)
27	"	S J W Hayman	30th January	
28	"	J P S Hayes	30th January	
29	"	F A Low	20th June	
30	"	J Mou	23rd July	

V—R A M C—(Concl'd)

B—RETIREMENTS—Contd

No	Rank	Name	Date	REMARKS
31	Major	H A Cummins	28th July	(T H P 21st October 1901)
32	"	G Bent	28th July	
33	"	E S Marder	28th July	
34	"	C W Allport	28th July	
35	"	T Browning	28th July	
36	"	R N Buist	28th July	
37	"	W I Trotter	28th July	
38	Captain	C S Cato	15th August	
39	"	T J Crean, V C	8th September	
30	"	T J Clapham	21st October	
41	Lieutenant	R P Nash	6th January	
42	"	A J Arch	10th January	
43	"	A S Millard	7th July	
44	"	D Le Bas	14th November	
45	"	W Parsons	12th December	

C.—PROMOTIONS

No	Old Rank	Name	New Rank	Date	REMARKS
1	Colonel	F W Trevor	S G	29th June	v Macnamara, R
2	Lt Colonel	R H Forman	Colonel	8th January	v Routh, T H P
3	"	O Todd	"	4th April	v Blennerhasset, R
4	"	F J Lambkin	"	9th May	Special
5	"	J G Hawwood	"	29th June	v Trevor, P
6	"	E North	"	18th July	v Saunders, D

D—HONOURS

No	Rank	Name	Honour	Date	REMARKS
1	D G	A Keogh	K O B	29th June	Retired, late Guards
2	S G	W Pratt	C B	29th June	
3	Surg Major	R Farquharson	Privy Council	29th June	
4	Lt Colonel	B M Skinner	M V O	24th July	
5	Major	H A Bray	Osmanieh	July	
6	"	J H Rivers	"	3rd April	
7	Captain	H F Stallard	"	3rd April	

E—DEATHS OF RETIRED OFFICERS

No	Rank	Name	Date	REMARKS
1	S G	D R Mackinnon	5th April	Redhill
2	"	E S Protheroe	9th January	Llangydwen
3	D S G	H C Herbert	2nd March	Plymouth
4	"	A Tulloch	8th April	Eastbourne
5	"	R Webb	8th October	Rathmines, Dublin
6	"	D McQueen	21st October	Edinburgh
7	"	H Roch	9th November	Youghal
8	"	J Wills	10th November	London, cycling accident
9	D S G	J L Jameson	24th November	London
10	B S	C F Richards	30th August	Warrenpoint, County Down
11	Lt Colonel	C E Dwyer	1st January	Kingston, Dublin
12	"	F A Harris	27th September	
13	"	C S Wills	12th October	Lancaster
14	"	A W Bate	22nd October	Bromley, Kent
15	"	W D A Cowan	24th November	Southsea
16	Surg Lt Col	R Collins	31st October	Southsea
17	"	W R Davis	13th January	
18	Surg Major	H A Gogarty	18th April	Canterbury
19	"	J W Trotter	14th June	York
20	"	H H Maclean	24th June	Northampton
21	"	H F Smith	5th August	Gleatna, Dumfriesshire
22	"	W Leach	13th October	Martock
23	"	W Bensman	3rd November	Ilfrcombe
24	"	H T Chapman	27th November	Budleigh, Salterton, Devon
25	Major	S J W Hayman	23rd May	Southsea
26	"	M O C Drury	18th December	Cynghoidy, Carmarthenshire gun accident
27	Surg Capt	W B Stokes	October	
28	Asst Surg	Sir H Macartney	8th June	Kenbank, Kilkudbright
29	"	H McNiece	— June	Carshalton
30	Lieutenant	N D Harvey	21st December	Osborne

For the above notes on the Services in 1906, we are, as usual, indebted to Lt Col D G Crawford, I.M.S.—(ED, I.M.G.)

THERAPEUTIC NOTES AND PREPARATIONS

WE extract the following notes on Tender Feet and on Corns from an interesting and practical lecture delivered by Mr. Malcolm Morris at the Polyclinic—(Polyclinic, December 1906)

"Feet which look normal may yet be hot and tender when more than a moderate amount of walking is done, and they may also swell and become blistered. Examples are plentiful among volunteer medical officers as well as volunteers generally, whose habitual life is sedentary. Tender feet are often those which sweat considerably, but not always. The remedy consists in the use of certain powders. TENDER FEET may be divided into those which are dry, hot red, and perhaps peeling, and those which sweat excessively, whether with or without a bad odour. There are three kinds of powder for the purpose: (1) Powder soluble in water, and therefore in the sweat of the foot, an example of this is boric acid powder, sold as 'sanitary rose powder', it is particularly useful in cases of objectionable odour; (2) powders in solution in water or sweat, such as starch, and oxide of zinc; (3) mixed powders consisting of both soluble and insoluble, and this is the most useful for people who do much walking.

"A prescription is—

Finely powdered salicylic acid	1 dram
Finely powdered boric acid	1 oz
French chalk, to	4 ozs

"This is largely used in European armies for the prevention of tender feet. Another powder is—

Salicylic acid	1 dram
Powdered oleate of zinc	1 oz
French chalk, to	4 ozs

"Volunteers whose usual occupation is sedentary should be told it is necessary to prepare their feet three or four weeks before going into camp by washing them morning and night in tepid water, with an antiseptic soap preferably ichthyol superfatted soap, or carbolic soap. Next dry the feet and bathe with the following lotion—

Spirit of wine	} Equal parts
Extr. hamamelis (or hazel) oil	
Rose water	

"Then dry the feet and put inside the socks the powder already mentioned. Ointments are not so successful.

"For CORNS and CALLOSITIES, as well as for eczematous conditions, finely powdered sulphur is very useful, and can be applied by itself if there are no ulcerations, but only if the individual is laid up. Lard in its various forms, is also of great use for non-ulcerating conditions. In my experience, the glycerinum plumbi subacetatis of the Pharmacopœia is a little too strong, certainly to begin with. Begin with one part glycerine of plumbi subacetatis and two parts lanoline and if it is borne well, increase the strength.

"For INGROWING TOENAILS the nail should not be removed, except as the very last resource, the nail should not be cut at the side, but with a square top, and the nail coaxed to grow over the painful tissue by inserting under it a small piece of foil such as that supplied with cigarettes. If there are granulations around the part these should be treated on the principles I have laid down for tender feet, and it may be necessary to apply some caustic. For the CURE OF CORNS, a solution of salicylic acid, the basis of most of the corn remedies, is one of the best applications, but it is necessary to lie up for a few days. It should be used as follows: half a dram salicylic acid, 4 drams collodion, to which may be added a little extract of cannabis indica. Before applying, as much as possible of the epidermis should be removed with a sharp knife and by rubbing down with pumice stone. Unguentum pyrogallici 10 per cent, is beneficial, because it picks out the diseased epidermis and does not injure the surrounding skin. After the treatment the patient must pay the greatest attention to boots and socks, these should both fit the socks should not be large so that they fold over. That would produce a corn anywhere. There is no need to have great ugly boots, so long as there is enough room, that is all that is required.

"The SOFT CORN, which comes between the toes is most painful. The first stage is to try to convert the soft corn into a hard one, by applying the drying powders I have told you of. If it is a small corn you can then get rid of it by means of salicylic acid. Or you can apply acetic acid, and before that is dry apply nitrate of silver then the acid will carry the caustic right through the tissue."

The *Medical Times and Hospital Gazette* for November 10th gives a full report of the case before Mr. Justice Fry against the Capsuloid Company brought by Messrs. Burroughs, Wellcome & Co. The former Company advertised some secret preparations in the form of what they called *tabloids*. Messrs. Burroughs, Wellcome & Co., who have registered the word "TABLOIDS" as their trade mark, sought to

restrain the other Company from the use of a word so similar, and the learned Judge in his judgment supported the contention of Messrs. Burroughs, Wellcome & Co., and decided that the use of the other similar word was "calculated to deceive." We congratulate Messrs. Burroughs, Wellcome & Co. on their victory, as the composition of their TABLOIDS is known whereas the other Company tried to give a similar name to a secret preparation.

WE have been asked to announce that samples of PLASMON as prepared by the International Plasmone Co., of London (56, Duke Street, Grosvenor Square, W.), will be sent free to all practitioners. Medical men are largely agreed as to the value of this food, which contains 80 per cent of proteids, and is many times more nutritious than milk. It can be used in various ways, not only for invalids, but in ordinary cooking. It is claimed to be of special value in wasting diseases, anæmia, and such ailments.

NEW PREPARATIONS BY FREDERICK STEARNS & Co., DETROIT, MICHIGAN, U S A

ADNEPHRIN SOLUTION—This is a stable and sterile solution of adnephrin in physiological salt solution, containing one half of one per cent of methaform, and is a powerful astringent and hemostatic, as well as a remarkable heart stimulant. On account of its powerful local vasoconstrictor action, it is of great value for controlling hæmorrhage. It will be found useful in epistaxis, hæmoptysis, hæmatemesis, menorrhagia, postpartum hæmorrhage, hæmaturia and other forms of hæmorrhage, and, with proper precautions, may be used hypodermically and intravenously.

ALPHOZONE is a powerful germicide, but non-poisonous and non-injurious to animal tissues, and being an organic peroxide, has all the valuable qualities of hydrogen peroxide, but none of its undesirable properties. It is indicated in all infections, in which a germicide can be brought into contact with the pathogenic micro-organisms present. The records of its germicidal action are exceedingly satisfactory.

METHYLOIDS—These are an improved combination of methyl blue, santal oil, copra oil, hævlem oil and cinnamon oil, and are supplied in capsoid form for the treatment of gonorrhœa and its complications, and in which a urinary antiseptic is indicated. They are convenient to carry, and to take, and are readily soluble, and the ingredients are protected from deterioration. The dosage is accurate.

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Buxton's Anaesthetics (H K Lewis)
Macerba's War with Disease (Baillière, Tindall & Cox)
Diagnosis and Treatment of Intussusception Clubbe (Young, J., Pentland)
Administration Report N W F Province
Sanitary Commissioner's Madras, Proceedings
Sanitary Commissioner, India Report for 1905
Aids to Dental Surgery (Baillière Tindall & Cox)
Aids to Medical Diagnosis (Baillière, Tindall & Cox)
Cholera—By S C Ghose The Hahnemann Home
The Madras General Hospital Report

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM—

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Original Articles

RECENT ADVANCES OF KNOWLEDGE IN CONNECTION WITH RABIES

BY J W CORNWALL, M A., M D (Cantab.), D P H., D T M.,

CAPTAIN, I M S.,

Director, Pasteur Institute of Southern India, Coonoor

A TREATMENT

OWING to the fact that British people are seldom brought into contact with rabies in their own land and that there is no Pasteur Institute in England, there is a considerable degree of ignorance amongst them concerning everything appertaining to the disease which extends also to the medical profession. Opportunities for research likewise being wanting in England, it has happened that almost every addition to our knowledge of this affection has been made by natives of the continent of Europe. Our people therefore are largely under the misconception that there is only one system of treatment for rabies which was initiated by Pasteur and has been dutifully followed in every detail ever since 1885. People are also mostly unaware that there are some 40 Institutes in different parts of the globe in which the treatment of rabies is being carried on. Just as no two practitioners will treat a given ailment in identical ways but only on similar principles, so it is with the physicians of the numerous antirabic institutes, various modifications of the original method have suggested themselves, and, proving satisfactory, have been permanently adopted.

Pasteur's original treatment was undoubtedly crude and capable of much improvement. It consists in removing the spinal cords of rabbits dead from rabies and drying them over caustic potash. Patients are inoculated first with an emulsion prepared from cords which have thus dried for 14 days, and are gradually worked up to inoculations with cords which have dried for only 3 and 4 days. The cords which have dried for the longest time are the least virulent and those which are the freshest are the most virulent.

The main objection to this method is the impossibility of securing uniformity of dosage, since the cords dry at rates varying with their sectional area and with surrounding conditions of temperature and humidity, so, as has been shown by experiment, at one time a cord which has been drying for only 5 or 6 days has entirely lost its virulence, at another a cord which has been drying for 10 to 11 days is still quite virulent. Moreover, the technique employed admits of too wide variations in the strength of the emulsions injected. There is no question but that the method with all its defects has been enormously successful, still that is not the point

It should rather be considered whether the process is not susceptible of improvement.

The practice of the different Institutes is not an easy matter to arrive at since even in their reports they rarely touch on the details of their mode of preparation, but rather confine themselves to statistics. However, those that are generally known about are sufficiently varied for purposes of illustration. At one institute the cords are attenuated by heat instead of by drying, at another by the action of gastric juice, one starts by using filtered virus proceeding later to partially dried cords, another uses fresh virus from the beginning but in high dilutions, some inject their patients twice or even three times a day and finish their course in 8 to 10 days, others only once a day and spin it out for 30 days, and yet another injects three or four huge doses of fixed virus instead of a number of small doses, and so on. Yet all claim results as good as or even better than Pasteur announced.

The following table shows some of the variations in the doses employed which I have calculated as nearly as possible.

(1) Pasteur's original schema for slight bites

Each person got *about* 39cc of *about* 1 in 50 emulsion - *about* 78 grams of cord substance

(2) Pasteur Institute, Paris, present schema for slight bites

Each person gets *about* 56cc of *about* 1 in 50 emulsion = *about* 1 12 grams of cord substance

(3) Pasteur's original schema for severe bites

Each person got *about* 42cc of *about* 1 in 50 emulsion = *about* 84 grams of cord substance

(4) Pasteur Institute, Paris, present schema for severe bites

Each person gets *about* 72cc of *about* 1 in 50 emulsion = *about* 1 44 grams of cord substance

(5) Hogen's schema for slight bites

Each person gets *about* 43cc of various dilutions amounting in all to 0.48 grams of cord substance

(6) Hogen's schema for severe bites

Each person gets *about* 61cc of various dilutions amounting in all to 0.75 grams of cord substance

(7) Babes's schema for severe bites

Each person gets *about* 60 cc of 1 in 50 emulsion = 1 2 grams cord substance

(8) Nitsch in slight bites gives 2 5 grams of cord substance

(9) Nitsch in severe bites gives 3 to 4 grams of cord substance

Nitsch has recently published some well reasoned articles in the *Centralblatt für Bacteriologie*, in which he compares the statistics of several Institutes and enters a plea for higher dosage, while protesting against the present method of calculating the percentage of deaths after treatment. Pasteur arrived at the conclusion that immunity by reason of his inoculations was not established until at least 14 days had elapsed after the completion of the course of treatment, so all deaths during those 14 days were, and still

are, everywhere omitted when calculating the percentage of failures Nitsch, in the 1,424 bites treated by him with high doses, had only 5 deaths within the 14 days, and none subsequently His percentage of failures calculated in the usual way was, therefore, *nil*, and this success he attributes to the greater immunizing power of his high doses He is not yet satisfied with the results obtained, but hopes for even better ones, believing that only those cases should be looked upon as past all cure in which the disease shows itself at the latest within 10 days after the beginning of the course of treatment Of course, the number of patients he has yet dealt with is comparatively small, and his conclusions may not be borne out by further experience

Rabid antivivisectionists, members of the British Humanitarian League and such like folk who object to all curative and prophylactic inoculations on the score of cruelty, but who with some inconsistency do not give up their bacon, poultry and butcher's meat, and will even shoot and fish for sport, sometimes assert that, far from curing rabies, Pasteur's inoculations actually confer it, and that the deaths which have occurred after treatment would never have occurred without it

Bauer's analysis of a large number of deaths from hydrophobia amongst untreated persons shows that it is by no means unusual for untreated persons to die within quite a short time of their bites His analysis indicates that 8.24 per cent died within 19 days of being bitten Again, Nitsch's late examination of 100 deaths from hydrophobia amongst the untreated gave 11 per cent of deaths within 31 days of being bitten So it is obvious that deaths during or shortly after the course of treatment cannot fairly be ascribed to the influence of the treatment The possibility of a negative phase of resistance being induced by the injections and of the actual harmfulness of the latter in certain cases remains not proven The causative agent not yet having been cultivated we are not in a position directly to ascertain the progress of the process of immunization, though a roundabout method seems practicable which may throw some light upon this point

Nitsch believes that further improvements in the method of treatment lie in the direction of combining injections of antirabic serum with injections of fixed virus, since it is evident that Pasteur's method of immunization can only succeed in those cases which have a sufficiently long incubation period to allow of immunization before the outbreak of the disease It is the problem of small-pox vaccination over again a person vaccinated 3 to 4 days after exposure to infection by small-pox is not immunized in time to prevent the outbreak of small-pox In rabies, however, we are dealing with a disease possessed of a very variable incubation period

The idea underlying injections of immune serum in rabies is to tide over the period during

which "immune body" is being formed in the organism by injecting ready-made immune body, but there remains the possibility that the presence of this ready-made immune body might have an adverse influence on the formation of immune body in answer to the stimulus of the fixed virus injections Much work remains to be done in this direction, and matters are complicated by the fact that when a very active antirabic serum is mixed *in vitro* with fixed virus, an excess of the serum actually prevents any microbicidal action, owing to the phenomenon of "deviation of complement" Tizzoni and Bongiovanni of Bologna eighteen months ago claimed to have neutralized fixed virus *in vitro* by the action of radium, and also to have saved rabbits by subjecting them, after subdural inoculation, to the action of radium through their eyes

They exclude radium "emanation" which they say is injurious to the eye, and state that the β rays are the most active against rabic virus Other workers have entirely failed to obtain beneficial results, but Tizzoni replies that their technique was defective The matter, therefore, is still *sub judice*

B THE CAUSATIVE AGENT

Negri of Pavia in 1903 described a cell inclusion which he found in certain cells of the central nervous system, particularly in the Hippocampus Major, Purkinje's cells of the cerebellum, the large pyramidal cells of the cortex and in cells of the anterior horn and spinal ganglia

He considers this to be a protozoon and found it in practically every case of street virus rabies examined, whether in dogs, cats, men or bovines His discovery has been amply confirmed by observers all over the world, and it has been established as well that the inclusion is specific for rabies and is not found in any other normal or pathological state Whether the object seen is a protozoon or not, which has not yet been proved, the discovery is undoubtedly of enormous importance for purposes of diagnosis

Negri's bodies can be demonstrated in brains which have been ill preserved and are even in a state of putridity A microscopical diagnosis of rabies can, therefore, now be made in a day or so, whereas, formerly, if there was any uncertainty, a rabbit had to be inoculated from the brain of the animal suspected of rabies, and the diagnosis could not be declared until this rabbit showed symptoms of rabies, which might be at any time from 10 to 60 days later, or even more Moreover, it frequently happens that the piece of brain sent for examination is putrid or preserved in some medium which destroys the rabic virus, and in neither case can it be utilized, so the diagnosis remained unassured Now, if Negri's bodies are found, the diagnosis of rabies can be safely made, if they are not found and the specimen is fit for inoculation in a rabbit, the bio-

logical test can still be made, and in a few cases it succeeds where the Negri bodies have been missed by the microscope. The importance of early diagnosis in the event of patients being unwilling to go for treatment until they know for certain that the animal which bit them was rabid is evident. It is in addition much more satisfactory for patients under treatment to know that their inconvenience is really necessary and is not being submitted to merely on the off chance. The peculiarity of Negri's bodies is that, though they are easily found in the brains of animals dead from street virus, they are with difficulty found in fixed virus brains, and then only in very minute forms. Some observers have failed to find them in fixed virus brains, others find them every time, so more work on this point is required.

All observers agree that rabic virus filtered through Berkefeld candle retains its virulence. The large Negri bodies cannot pass this filter, so if, as Negri holds, the brain is thickly studded with minute forms or spores, which are unstainable or ultramicroscopical and therefore invisible, the filtrability of the virus is an argument in favour of the parasitic nature of these bodies.

MALTA FEVER IN THE PUNJAB

By C N C WIMBERLEY,

MAJOR, I M S,

Specialist in Fevers, 3rd Division

DURING the year 1906, while stationed in Ferozepore in the Punjab, I have had under treatment twelve native soldiers in my Regiment, the 15th Sikhs, suffering from Malta fever, and I think that a few notes about them may be of interest. As they illustrate the different clinical aspects which the disease may present, that Malta fever is endemic in this station, has now been absolutely proved. Lamb has, on two occasions, isolated the micrococcus melitensis from the splenic blood of patients suffering from continued fever in Ferozepore.¹

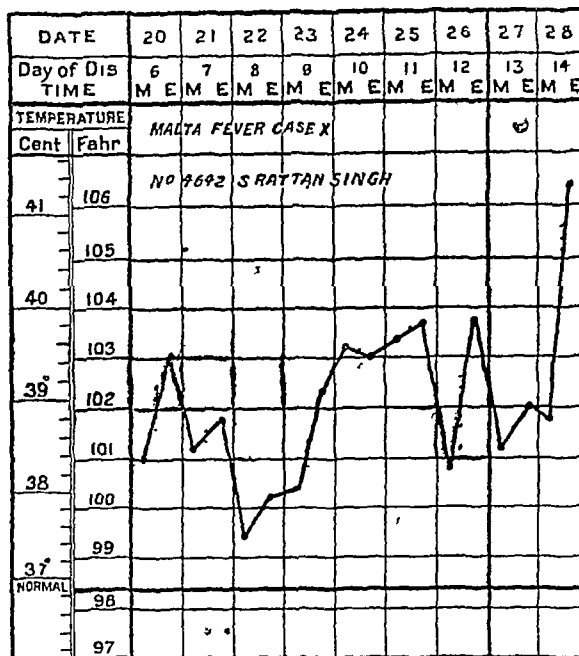
He has also isolated the same micro-organisms from nine cases in Multan.

That the disease is widely prevalent throughout Northern India will, I think, be elucidated before long. To my knowledge Mian Min, Rawal Pindi, Muir, Nowshera and Peshawar have all furnished cases, while just lately I have seen a man who apparently contracted the disease in the mairan of Tnah, and I feel sure that where one case is found, careful scrutiny will reveal the existence of many others. For what has been brought home to me during the past year is that the symptoms caused by the invasion of the microbe may be such, that the real nature of the disease is likely to be overlooked, and a wrong diagnosis made in quite a number of cases. In the first place it seems probable that many of

the cases of chronic "rheumatism," lumbago and "sciatica" met with in the native army may be in reality due to the micrococcus melitensis.

Again, Staff Surgeon Shaw, R.N., has lately shown that ambulatory cases of Malta fever are

CASE X.



not infrequent in the Island of Malta.² If in Malta, why not in India? That the disease is spread through the ingestion of the microbe into the alimentary canal, and not by some intermediate host such as the mosquito or other blood-sucking fly seems at least probable.

Captain Foister, I M S, has proved that goats in Ferozepore are infected, just as they are in Malta, and succeeded in isolating a pure growth of the micrococcus melitensis from the milk of a Ferozepore goat.³

Numerous workers in Malta have shown that the micrococcus is abundantly present in the urine of infected men and animals even for months after recovery from an attack of the disease. Contamination of articles of diet from infected urine is easy to understand. By this means the disease has been artificially produced over and over again in monkeys. But it seems to me that it is probable that in, at any rate, most cases, the disease is conveyed directly from the goat to man, through the drinking of milk from infected goats.

From what I can gather, goat's milk is commonly consumed in two ways by natives in this part of the world. Firstly, it is largely used with tea, and secondly, it is drunk mixed with cold water. But in neither case is it boiled as cow's milk generally is. I shall now briefly allude to the 12 cases which I have had under treatment.

Case I—This was the case of a powerfully built man who had only returned from service in B C Africa some six months before. He

suffered from irregular fever for 50 days with splenic enlargement and much sweating. His blood was repeatedly examined for malaria with a negative result. His blood coagulability was much delayed, and he had on one occasion slight hæmatemesis. His appetite remained fairly good throughout his illness. He had no joint or testicle complication. His blood gave a complete reaction to *micrococcus melitensis* in a dilution of 1—640 on the 15th day of his illness. He recovered completely with no relapse.

Case II—This was a more severe case. The patient had more or less continued fever for 34 days, his temperature running high, often to 104°. He had nocturnal delirium, often passed his stools in his bedding, and became very much emaciated. He was in fact at this time gravely ill. His blood showed a complete reaction in a dilution of 1—640 on the 12th day of disease. As his temperature began to fall, he sweated most profusely.

He next had an apyrexial interval of 17 days, at this stage his blood was found to give a complete reaction in 1—1280.

This second undulation of fever lasted 25 days, but was not of nearly so severe a nature as the first. The fever was of a remittent nature, the remissions being accompanied by the most profuse diaphoresis, soaking the bedding. After this he made a good but slow recovery. He had no complication.

Case III was a particularly mild case, the patient having only one bout of fever of an intermittent character, lasting 26 days. He had no further fever, though he was under observation for three months longer. Nor was there any history of a previous attack of fever. His blood gave a complete reaction in a dilution of 1—960. Soon after his temperature came down he was found to have effusion into the sheaths of the extensor tendons of his right hand. The affected part was hot, painful and swollen. Under treatment by cold compresses, followed by iodine, this subsided in about a fortnight.

Case IV was a good example of the prolonged nature of the illness in some cases. The subject was a fine, healthy, well-built man, aged 25, who had practically never been ill before. His first exacerbation of fever lasted 41 days, during which time his blood was found to give a complete reaction to *micrococcus melitensis* in a dilution of 1—640.

He then had an apyrexial interval for a fortnight, followed by a second wave of fever lasting 44 days. During this second attack he had severe pain in his left hip, so that he could not turn in bed. As usual, he sweated very profusely.

About a fortnight after his temperature came down for the second time, he was allowed at his urgent request to go to his home on three months' sick leave for change of air.

He tells me that about three weeks after he got to his village, *z e*, about five weeks after the

end of his second wave, he had a third attack of fever lasting a month or more. This was accompanied by a relapse of the old hip trouble, which had nearly disappeared. The pain now shot down the left thigh like sciatica. On his return from sick leave he was at once readmitted to hospital. He was given a very liberal diet, his leg was first blistered, and then massaged daily. He improved rapidly, and was finally discharged to light duty, almost exactly nine months from the date of his first admission.

He is now, four months later, in robust health, all lameness having gone.

Case V—This man on admission had fever with a spleen enlarged to three fingers breadth below his ribs, and examination of his blood revealed some living parasites. Hence Malta fever was not at first suspected. But when his fever did not seem to yield to quinine, his blood was further examined as to its reaction to Malta fever, and a complete result in a dilution of 1—1280 found. His fever lasted for 30 days, and no relapse followed, though he was under observation for three months. He had no complication of any kind.

Case VI—This case was that of a native officer, aged about 40, who reported sick on the 8th March 1906, complaining of severe pain in the right hip. He said he had been feeling out of sorts for a fortnight or so beforehand, but was not aware of having had fever. On admission his evening temperature was found to be 100°. The pain was so severe he could not turn in bed. Examination seemed to point to some affection of the sacro-iliac joint. Under treatment by rest, salicylates and iodides, and blisters, the acute pain left him, but a dull aching feeling of weakness remained.

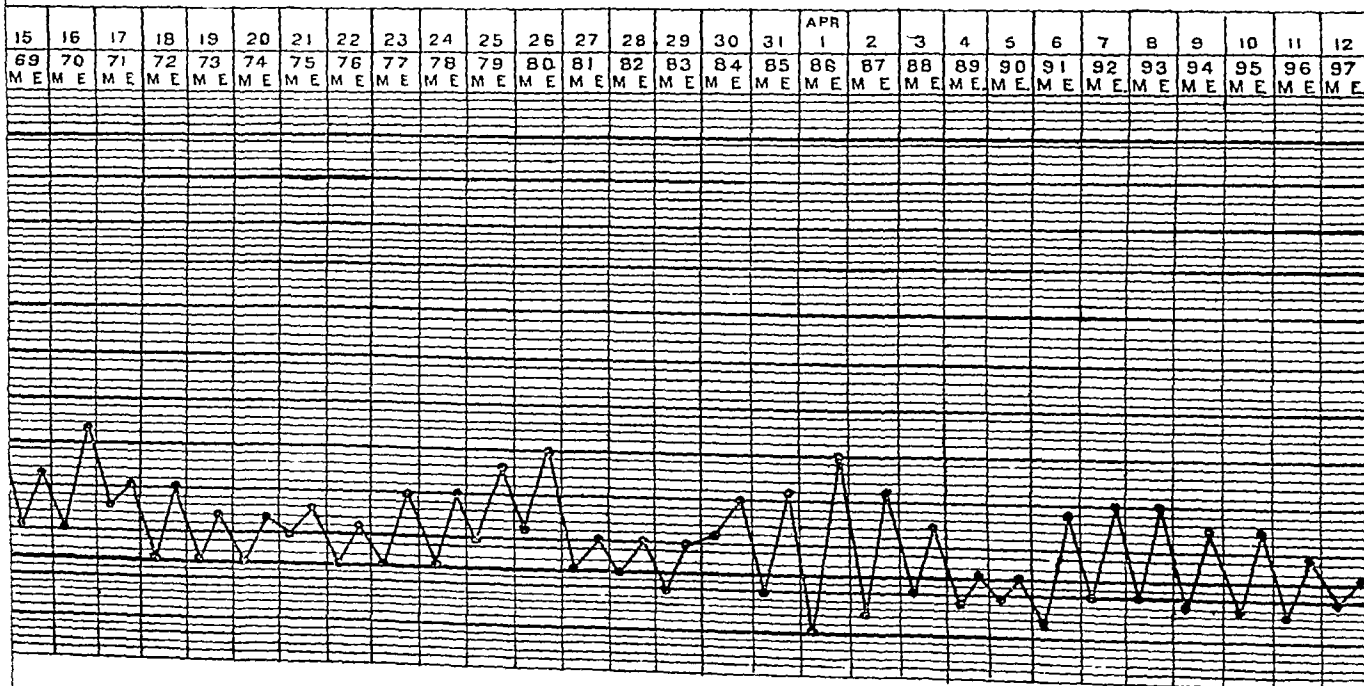
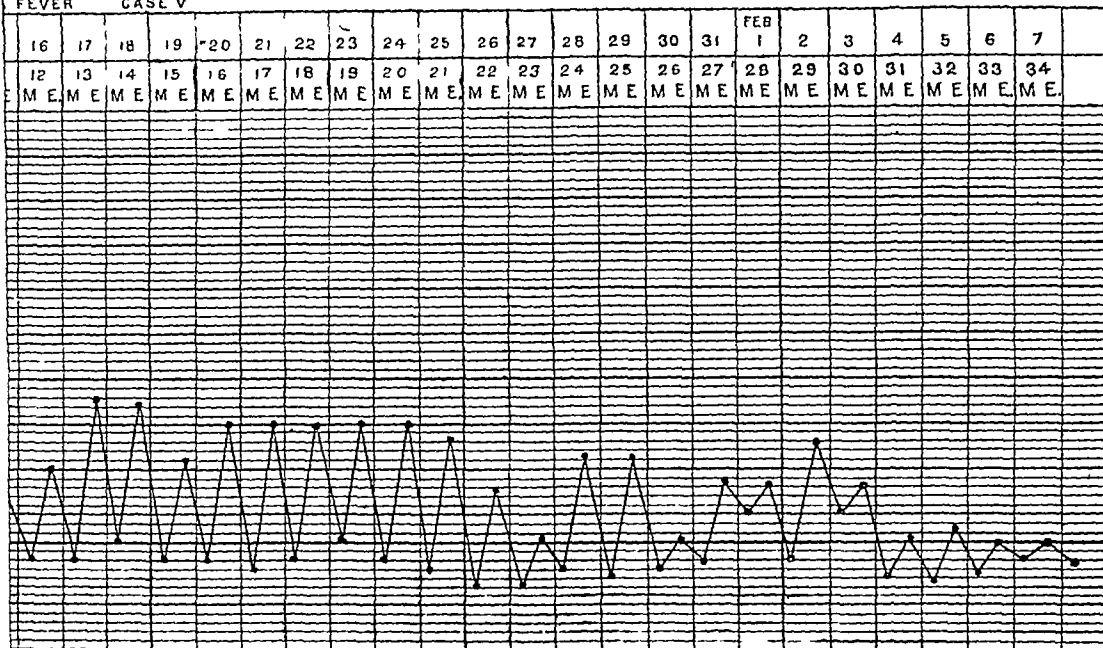
At that time Malta fever was not suspected, and his temperature was not taken regularly, but I think he could not have had any severe prolonged fever.

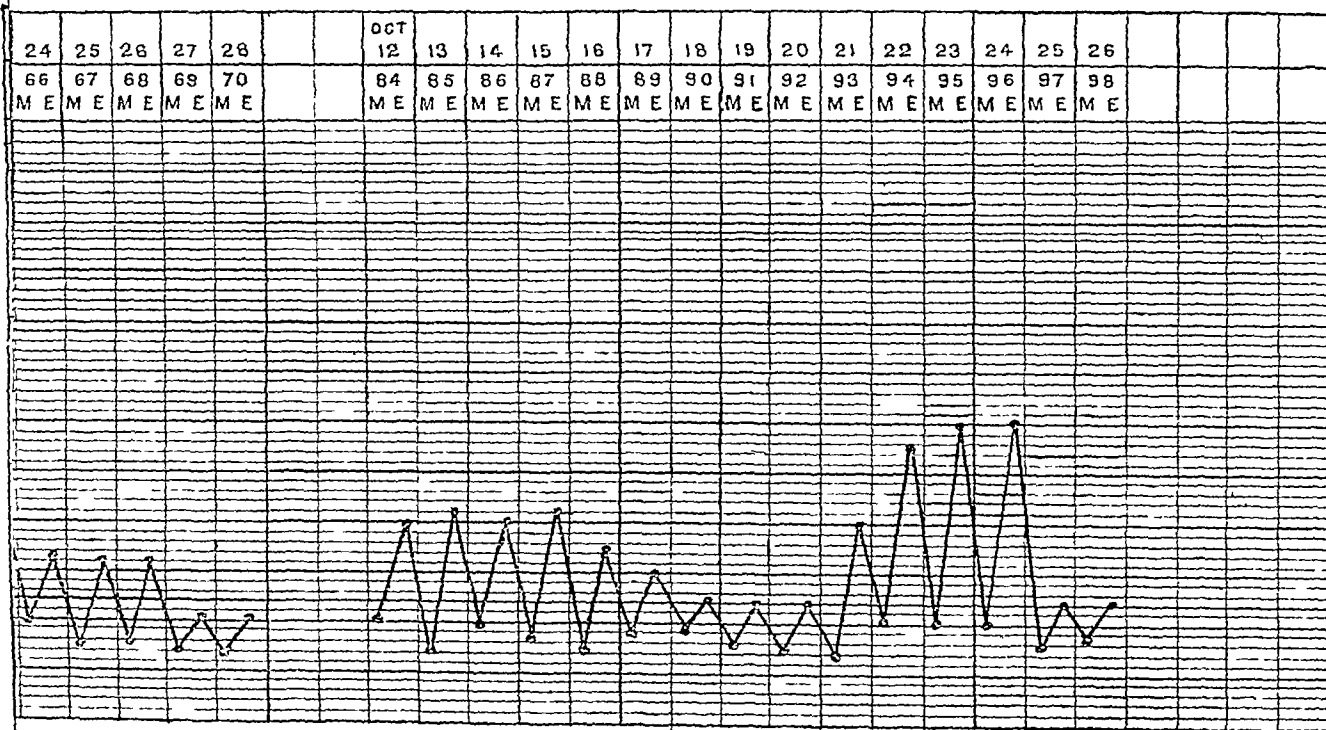
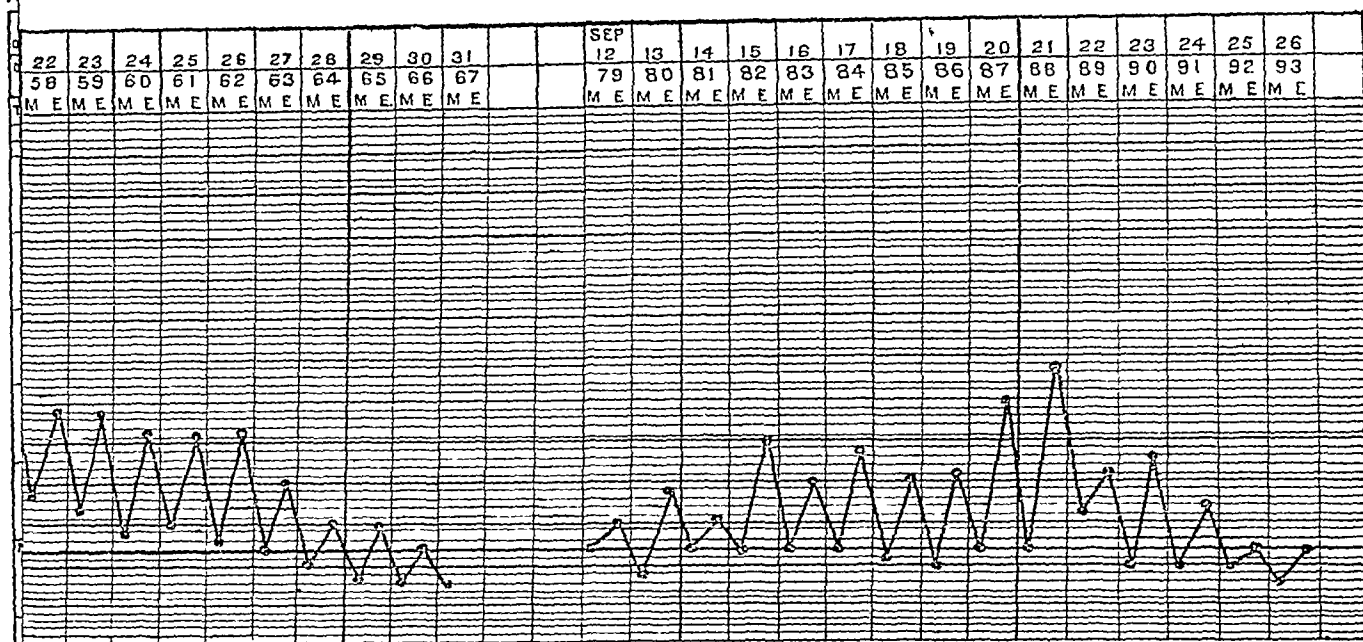
About the 8th April, his temperature was found one evening to be 102°. At that time his blood was examined for Malta fever, and a complete reaction got in low dilutions (1—40).

Careful enquiry elicited no history of anything like a previous attack of continued fever. His temperature was now regularly taken, but generally found to be normal, except sometimes in the evening when it registered 100° or so, on one occasion 101.6.

The pain in his hip gradually passed off, and he was discharged from hospital on the 4th May. It may of course be objected that this was not a case of Malta fever at all. But the experience of all observers who have worked at Malta fever, is that a reaction in a dilution of 1—40 only occurs either in the subjects of Malta fever, or in patients who have previously suffered from the disease. Yet in this case nothing like a history of a previous attack could be elicited, nor did any entity in his medical history sheet occur for a prolonged fever. In

FEVER CASE V





fact, he had hardly ever been in hospital before

Case VII—This was a somewhat similar case. An old native officer, aged about 51, complained of severe acute lumbago on the 9th April. He was known to have been out of sorts for some time, and for a month previously had several times taken quinine for a few days on account of "fever." The temperature on admission was 102°. His blood was examined as to its reaction to Malta Fever, in the light of the last case, and a complete reaction in 1—320 found. Yet this man also had no regular continued fever after admission, only an occasional evening rise to 100° was found.

Under treatment by free purgation (he was very constipated), dry cupping and massage of the back, all acute pain left him, and only a slight stiffness remained. When at its height the pain seemed, like acute lumbago, to be mainly in the erector spinal muscles. He left Ferozepore on leave on urgent private affairs on May 5th. He tells me that after he reached his home he had a slight attack of fever with profuse sweating, lasting about 5 days. On his return to Ferozepore he did his ordinary duties. However, in August, he again was laid up with effusion into his right wrist joint, extending up the tendon sheaths.

Case VIII—This like the last two cases was also in the person of a native officer, aged about 37. While away at a musketry class at Rawal Pindi, he was admitted to hospital for "Sciatica" on 17th February 1906, and as he did not recover, was transferred to Ferozepore on 24th March. On arrival, a careful examination seemed to point to some affection of the left sacro-iliac joint. Passing the iliac crests together caused pain, gentle movements of the hip, none. The pain went down the leg, but pressure on the sciatic nerve was painless.

When the last 2 cases were both found to show a Malta Fever reaction, his blood was also examined, and a complete reaction in 1—80, and marked in 1—160 found. Yet he gave absolutely no history of fever or sweating, nor could I get any history from Rawal Pindi, other than that of severe "Sciatica."

His temperature was now carefully taken, and on two occasions found to register 100° in the evening. The hip-pain gradually subsided and he was discharged to duty on May 7th.

Case IX—This case was that of a sepoy, aged 29, who was on duty in the Quarter-Master's stores, and did not have to go to many parades, or do guards, etc. It seems that about the beginning of March 1906, he began to feel out of sorts, and think, he perhaps had slight fever. But he did his regular work, which was not severe and did not report sick. He says, he occasionally took some quinine, so he must have had some fever. On 16th March, he went on ordinary leave to his home for two months. While there, he says, he felt all the time unfit for much. He

had pains all over his body. He was not aware of having fever. I foolishly omitted to enquire as to his sweating.

On his return to the regiment, he says, he thought his health was breaking up. So he decided to apply for transfer to the reserve. It was then on May 22nd, 1906, that I first saw him, and elicited the above history. I therefore took him into hospital. On May 25th, he was found to have marked effusion into the left wrist joint. He had, however, no pyrexia. His blood was hence examined for Malta Fever, and a complete reaction in 1—80 found, marked in 1—160. He was kept in hospital for a month, but no pyrexia was found, nor did any further joint trouble set in. He was then sent on 2 months' sick leave and returned perfectly fit and well.

Case X—This was a fatal case, and occurred while I myself was away on leave. I am indebted to Capt Roberts, I.M.S., who was doing my work, for the notes on the case.

A lad of 22 came to hospital on 20th June, with a dirty tongue and a temperature of 101°, saying, he had been ill for 5 days. His bowels were freely opened by a brisk purge, and his temperature fell to 99° on the 22nd. It, however, again began to rise, and mounted gradually up, till on the 28th June he died with a temperature of 106.4. Meanwhile, a sample of his blood had been taken, and the Kasauli report, received after he was dead, was that, it gave a complete reaction to Malta Fever in a dilution of 1—5,120, and a partial reaction in 1—10,240. No post-mortem examination was held.

Case XI—This patient, a finely built man, aged 25, began to suffer from fever in the latter part of June. He was admitted to hospital, and had a prolonged bout of irregular intermittent fever, lasting 64 days. His blood reaction to micrococcus melitensis was complete in a dilution of 1—320. He had no splenic enlargement, and no joint complications, but he sweated profusely.

After an apyrexial interval of 10 days, a second undulation of fever, lasting a fortnight, supervened. Thereafter he recovered. His was a very straightforward case.

Case XII—The last of my series was that of a band boy, aged 17, a somewhat weedy youth, who had had small-pox a year ago and was growing rapidly. He was admitted to hospital on August 4th, saying he had had slight fever for a fortnight.

He had an attack of fever of an intermittent type, which lasted for 68 days. He had not any very marked symptoms, no splenic enlargement, no joint pains, and no excessive sweating. Save for his temperature chart one would have thought him well. Yet his blood gave a reaction in 1—160 to Malta Fever. And every evening his temperature went up to 100° or 101°, sometimes higher.

With a liberal diet he put on flesh all the time. After an apyrexial interval of a fortnight, he

had a second slight undulation of fever, lasting 13 days

On November 1st, he was discharged to duty, in much better condition than on admission. This case was an example of how little the general health may be affected in some undoubted attacks of Malta Fever.

These 12 cases show how differently the disease affects different people.

Case II was a typical severe case, case XI, a very ordinary case, and case III, a typical mild case.

Cases VI, VII and VIII show how easily one might overlook the disease, the only symptoms complained of being of a "rheumatic" character.

Case IX was a regular ambulatory case, while case IV illustrates how long the durability due to the micro-organism may last.

Lastly, case X shows how the disease may prove rapidly fatal.

I have to thank the medical officers of the Pasteur Institute, Kasauli, for many of the reactions. Captain McKendrick, I.M.S., carried out a long series of investigations in some of these cases to determine the limit of the agglutinative power, with a view to prognosis. Generally making the only point which seemed definitely apparent was that, a high agglutinative power meant a severe case of the disease, but did not necessarily mean that the patient was likely to recover. These results were not in accordance with the original observations detailed by Butt and Lamb at Netley.¹ Lastly, I have to thank No 855, first class hospital assistant Basant Singh, for the great interest and trouble he took over these cases while in hospital.

REFERENCES

¹ *Scientific Memoirs*, No 22

² *Report of Malta Fever Commission to the Royal Society*, Part IV

³ *Lancet*, dated 17th February, 1906

⁴ *Lancet*, dated 9th September 1899

NOTE ON THE OCCURRENCE OF AMOEBA COLI IN PORT BLAIR, ANDAMAN ISLANDS

By A R S ANDERSON, B.A., M.B. (Cantab), C.M.Z.S.,
MAJOR, I.M.S.

SINCE 1859, when Lamb noted the occurrence of amœbæ in human fæces, but without attributing to them any pathogenic significance, these organisms have been repeatedly described and found associated with a considerable variety of diseases. Lewis and Cunningham, in 1870, found them accompanying affections of the large intestine, the following year Cunningham discovered that the stools of nearly 20 per cent of those suffering from cholera contained amœbæ, while in 1875 Losch, at St Petersburg, attributed to their presence an attack of acute ulcerative inflammation of the large intestine. Since the propounding of this theory by Losch,

while many observers have lent their support to it, an almost equal number has opposed it.

Many observations of the occurrence of amœbæ in the stools of healthy persons have been put on record, but I am not aware of any large series of examinations of dysenteric and non-dysenteric stools, to find the relative frequency of amœbæ therein, that have been made in India. To help to fill this lacuna, I examined a considerable number of the stools of convicts in Port Blair, Andaman Islands. These convicts are particularly suitable for such an enquiry, as they live under practically identical conditions, partake of similar food and drink, and have careful medical records of their illnesses kept from the day of their arrival in Port Blair.

During the year 1905, there were admitted to the convict hospitals at Port Blair, 2,359 cases of dysentery, 290 of whose stools were examined microscopically. Of these

488 harboured amœbæ	{	29 harboured amœbæ alone
		455 " " & flagellates
		4 " Balantidium coli and
723 " flagellates	{	262 " flagellates alone
		2 " & Balantidium
		1 coli
		167 " Balantidium coli alone
		167 " no protozoa
		920

More than half of the cases of dysentery in Port Blair, therefore, presented amœbæ in their stools.

To contrast with these, the stools of 210 patients, admitted to one of the convict hospitals during the months of February, March and April 1906, were examined. These men had come to hospital for various diseases, chiefly malarial fever and injuries, those suffering from any sign of intestinal irregularity being excluded. After administration of a purgative, the watery stool was microscopically examined.

These 210 patients were divided into two groups, one including only those with no recorded or ascertainable admissions to hospital for dysentery, the other comprised those with a record of previous admissions to hospital for dysentery. In 12 cases this was less than one year, in the remainder at some period greater than one year from the date on which the stools were examined.

The first group numbered 155, the second 55, and the following table shows the result of microscopical examination of these 210 men's stools—

	1st Group No admissions for dysentery recorded	2nd Group Admissions for dysentery re- corded	Total
No protozoa	52	17	69
Amœbæ	1	3	4
" & flagellates	37	17	54
Flagellates	62	18	80
	155	55	210

No very striking difference then existed between the two groups while the total number exhibiting amœbæ, either alone or in company of flagellates, was 61, a proportion ($\frac{51}{100}$) rather lower than that found in the cases of dysentery examined ($\frac{48.6}{50}$). When free watery diarrhœa occurred, whether it were produced by dysentery or purgatives, protozoa, amœbæ, and flagellates were found most readily and in largest numbers. But the comparative absence of this factor, in the cases admitted for diseases other than dysentery, would account for the greater part, if not the whole, of the difference in the proportionate numbers exhibiting amœbæ in the dysenteric and non-dysenteric group.

The amœbæ found in the dysenteric stools mostly corresponded with those described as *Entamœba histolytica*, though occasionally some were less than 15μ in diameter, others in the same specimen were of the usual large size. The former may have been small daughter cells, which on two or three occasions I noted thrown off by a process of unequal division from a larger cell.

While some amœbæ found in non-dysenteric stools appeared rather smaller than dysenteric amœbæ, others could be in no way distinguished microscopically from the latter.

The dysenteric and the non-dysenteric amœbæ appeared to constitute but a single species which varied considerably both in size, colour, relative thickness of endo and ectoplasm, number of vacuoles and character of included contents. Division of motile amœbæ was noted on several occasions, and the very slow deliberate division of yellowish, spherical, non-motile amœbæ was frequently seen. This process seems also to have been observed and described by Cunningham in 1881.

The amœbæ found in non dysenteric stools have by some been regarded as the relics of a previous attack of dysentery, by others as the precursors of dysentery, while still a third body of investigators consider them mere harmless commensals.

Of the 41 convicts, with no recorded admissions for dysentery, whose stools contained amœbæ, the period of residence in Port Blair had varied from 12 years to a little less than one year, four alone having served so short a term as one year. Yet their medical history sheets, which are carefully compiled, and their personal statements showed that they had never been affected with dysentery. It is improbable then that in many of these men there had been attacks of dysentery for some years past. On the other hand, on analysing the interval between the last attacks of dysentery and the discovery of amœbæ in the stools of the 20 convicts who exhibited amœbæ and had records of previous admissions for dysentery, it was found that in 13 of the 20 men the interval varied from 1—5 years, the average of the 20 being slightly under $1\frac{1}{2}$ years. If then the amœbæ were a relic of the last attack, it must have lain

dormant and harmless for these considerable periods, and in probably many cases had been unable to prevent the healing of the dysenteric ulcers. For, on examining a considerable number of the large intestines of convicts who had died from violence or non intestinal disease, with records of admission for dysentery in their medical history sheets, I found that one year in the large majority of cases had sufficed to heal the dysenteric ulcers, the scars of which were frequently easily distinguishable. The above facts make improbable the theory that amœbæ are relics of a former attack of dysentery.

Microscopic examination of the stools of the 210 non-dysenteric sick prisoners extended from February to April 1906. I left Port Blair in May, but till my departure none of these non-dysenterics, who had exhibited amœbæ in their stools, had developed attacks of dysentery or shown any sign of intestinal disease. Several men were thus kept under observation for over two months, and by far the larger number of the others for over one month. Unfortunately, I was unable to continue the investigation longer, and fear that the comparatively short period of observation of these men will be considered, by those who attribute to the amœba a possible incubation period of many months, quite insufficient to justify the conclusion, that the amœba was not the precursor of dysentery in all these cases. Statistically, it is extremely improbable that any considerable proportion of these men developed dysentery within six months of the time of the discovery of amœba in their stools. And six months is for the dysentery of Port Blair an utterly extravagant limit to assign for the incubation period of this disease.

If then the amœba neither accompanies, follows, nor precedes attacks of dysentery, it must necessarily be an harmless commensal.

Councilman, Lafleur, and other authors who describe a specific amœbic dysentery, appear to differentiate this from other varieties of the disease by such vague clinical differences as the irregular course, tendency to chronicity and frequent association of abscess of the liver in the former, while pathologically the diagnosis rests upon the raised undermined edges of the amœbic ulcer and the primary lesion consisting in œdema and necrotic softening of the submucosa. Lastly, the fact that amœba is frequently found in tissues of the base of a dysenteric ulcer has been somewhat hesitatingly urged as an additional argument for incriminating the amœba.

In Port Blair it was quite as impossible to distinguish symptomatically dysenteric cases harbouring amœbæ from those not harbouring such parasites, as it was to distinguish those with no intestinal disease who harboured amœbæ from similar men with no amœbæ in their stools.

Though amœbæ were very frequently encountered, abscess of the liver was practically unknown in the Andamans. Less than 1 per 1,000 dysenterics developed hepatic abscess. And this

absence of hepatic complication could not be charged to the mildness of the disease, which killed in two years 298 of the 4,719 admissions

Pathologically, the cases presented every variety of ulcer, from the thick, heavy lipped form, to that with thin sloughy edges

If the position in which amoeba has been found be regarded as inculcating evidence of its pathogenic qualities, the same argument could also with equal cogency be brought against one of the flagellate inhabitants of the large intestine, *viz*, *Trichomonas hominis*, Davaine. This animal can frequently be found in the tissues of the base of dysenteric ulcers after these have been thoroughly washed and scraped to remove all possibility of surface contamination. *Trichomonas hominis* is found, however, so frequently in the faeces of healthy persons, as also is it a closely allied species in the large intestine of perfectly healthy wild pigs in the Andamans, that it seems to occupy no more important pathological rôle than that of one of our and the pig's numerous harmless commensals

To this category I would also relegate the amoeba coli or dysenteriae

CEREBRO SPINAL MENINGITIS IN BHAGALPUR IN 1906

By J M WOOLLEY, B A M.B (CANTAB),

Superintendent, Central Jail, Bhagalpur

1 In the Central Jail — A report on this disease was written by Captain E A R Newman, I M S, in 1902 (see *Indian Medical Gazette* of September 1902). Up to that time 89 cases of the disease had occurred in this Central Jail since 1897, and the period October 1900 to March 1902 shewed 41 out of the 89 cases, the disease being epidemic at that time. In continuation of this report a list of further cases is given below, commencing where the report ended. It includes 13 cases only, of which 8 came under my observation

disease, also that labour in a dusty atmosphere is prejudicial—9 out of the 13 cases were employed on work of this kind—also, that in certain pairs of cases, a probable common source of infection is seen, *vide* cases Nos 91 and 92 and 99 and 100 in this list

The interval of two years between cases No 100 and 101 is a long one. The disease could not well have been imported by either of the cases that occurred in June 1906. Take the first case, a Hindu male, aged 30. He had been nearly six months in jail. Before the onset of cerebro spinal fever, the man was admitted into hospital with a severe sore-throat. This was from the 3rd to 19th May. Then, having recovered, he went to work on a power loom, after 14 days at this he contracted cerebro spinal fever. The case was not very acute. Death followed on the 18th June, and diplococci, which appeared to be similar to those described as pertaining to epidemic meningitis, were found in the cranial fluid. I may also mention that the right lung shewed some abnormality. It was adherent to the chest wall.

As regards the second case, a Hindu male, aged 20. He had been in jail for 14½ months. Some two months before being attacked he began to lose weight, and was put in the losing weight gang. A month later he developed a troublesome cough, and was admitted into hospital for it. After nine days, the cough having disappeared, he was put in the convalescent gang. It may be mentioned that tubercle was suspected, but definite signs of this were not made out. He remained in the convalescent gang, and on the 8th June 1906 developed cerebro-spinal fever which ended fatally on 1st July 1906. This case also was not acute. In addition to diplococci in the spinal fluid, the right lung was found to contain cavities, in the pus of which were tubercle bacilli and diplococci. This case may, I think, be regarded as cerebro-spinal fever supervening on a tuberculous condition which was present and accounted for the loss of weight and the cough.

Case No	Age	Admitted to Jail	Attacked	Died	Work	Slept in	Remarks
90	26	2 11 01	17 6 02	21 6 02	Aloe	No 1	} Common source of infection
91	30	27 3 02	15 8 02	16 8 02	Wool Tearing room	No 11	
92	32	23 1 02	17 8 02	22 8 02	Do	No 11	
93	40	14 4 02	18 8 02	2 9 02	Road work	No 15	
94	20	1 8 02	3 6 03	7 6 03	Sweeper	No 10	} Work goes on in the same place
95	46		5 7 03	Recovered	Night watchman	Under trial	
96	25	16 8 03	26 12 03	Do	Sweeper	No 6	
97	30	7 7 03	1 1 04	Do	Rice cleaning	No 7	
98	36	15 11 02	13 2 04	29 3 04	Saw mill	No 4	} Used to associate in Hospital
99	35	13 6 03	3 1 04	6 4 04	Carpentry	No 11	
100	36	8 8 02	5 6 04	6 6 04	Special gang	No 13	
101							
INTERVAL OF TWO YEARS							
	30	8 1 06	2 6 06	18 6 06	Weaver	No 11	} Used to associate in Hospital
102	20	23 5 05	8 6 06	1 7 06	Conv gang	No 13	

This is a smaller list than that given by Captain Newman in 1902. It bears out his observations that newly admitted men are most subject to the

That the second of these cases contracted the disease from the first, cannot, I think, be doubted. He was in hospital at the time the latter was

taken ill, and was in the habit of associating with and sitting near him. He developed the disease six days after the first case commenced. This forms a third instance of common infection.

These then are the two cases that occurred after an interval of two years. They were both men in a poor condition of health. The jail was overcrowded, the numbers for May and June being 1,794 and 1,827. The general health of the prisoners was not good. The heat, of course, was at its maximum just before the rains, and owing to the heat at night it was the worst time of year as regards ventilation.

2 *The cases at Nathnagar*—A month later in August 1906—I went to the Constables' Training School, at Nathnagar, seven miles away, to see a case of supposed cerebro-spinal fever. The Hospital Assistant in charge had at one time been employed in the Alipur Central Jail, and had seen the disease there. He told me that one fatal case of a similar disease had occurred among the men a few days before and had been called bronchitis, as the man developed bronchitis first. The case I saw was cerebro spinal fever, and in a space of 14 days 7 cases occurred, 3 being fatal. The three first cases took place in the same barrack, which was much overcrowded. Measurements shewed 400 cubic feet per man, but there were three rows of large wooden beds with lockers, practically touching each other and very poor cross ventilation, at night this air must have been very foul. This middle row of beds was removed, the number of men in the barrack reduced by half and the disease stopped. *Post-mortem* examinations of the fatal cases could not be obtained. How does the theory of dusty labour apply in these cases? The constables are trained all day long in the open air. Bad ventilation in the barracks seems the only cause, and the first case commenced with bronchitis, then having become violent, the disease attacked others in an acute form.

3 *A case in Bhagalpur Town*—During the last week in August 1906 a corpse was brought for *post-mortem* examination to the Sadar Hospital. The man was said to have fallen into a tank and died from drowning. Well marked signs of cerebro-spinal fever were found in the brain. The relatives said he was suffering from fever at the time, and it appeared probable that he went to the tank, and fell into it, perhaps he died suddenly before or while falling, as the usual signs of drowning were not present. Unfortunately, the specimen of cerebral fluid I took for examination was spoilt, but I am pretty certain it was cerebro spinal fever. Captain Newman found a similar case *post-mortem* in 1901, and says one was recorded also in 1904 in the town.

Conclusions—Sporadic cases of the disease occur fairly frequently. There were two this year in the Central Jail, seven at Nathnagar, and one in the town. There was overcrowding in the jail when the two cases occurred, Nathnagar barracks were also much overcrowded, while the insanitary

conditions of life in Indian towns are well known.

As regards insufficient ventilation, this is known to predispose towards pneumonia. During 1900 and 1901 when cerebro-spinal fever was epidemic in the jail, pneumonia also was prevalent. There being 39 cases in 1900 and 42 cases in 1901. The jail was fairly full in 1900 and overcrowded in 1901. The first case at Nathnagar too was bronchitic.

Again, take the case of cerebro-spinal fever at Rajshahye in 1887. It came from a barrack with three rows of beds from the middle row of beds.

Cerebro-spinal fever made its appearance in Bhagalpur Jail in 1897. Before that time the numbers in jail were not above 1,300.

The daily average strength of the Central Jail for the past fifteen years was —

1892	1,285	
1893	1,258	
1894	1,301	
1895	1,209	
1896	1,205	
1897	1,584	11 cases of C S fever
1898	1,530	11 ditto
1899	1,691	4 ditto
1900	1,724	25 ditto
1901	1,815	31 ditto
1902	1,825	11 ditto
1903	1,647	2 ditto
1904	1,718	5 ditto
1905	1,800	none
1906	1,818	2 ditto

The numbers increased by 300 in 1897, and since then cerebro-spinal fever has occurred yearly with the exception of 1905.

Finally as supporting the overcrowding theory, not a single case of the disease has occurred among the women since the appearance of the disease. The reasons for this may be found in their condition. The women have plenty of space, their wards are seldom full, their worksheds may be regarded as covered in verandahs, not as four-walled rooms, their labour is dall-grinding, a fairly dusty occupation, but it is carried on practically in the open air. The average number of females is 642, and in addition about 15 children. This is small when compared with the males, but still it is remarkable that no case has ever occurred among them.

Suggestions—As the number of prisoners is not likely to decrease, the jail area might be enlarged and the present tiled mud floored sleeping wards removed. This would give more air space, and new brick wards could be built on the newly enclosed ground. Work-sheds should have all sides open to the air. A covering only is required as a protection from sun and rain.

LOTIO LIQUOR SODÆ CHLORINATÆ
AN EXCELLENT DRESSING FOR ALL SORTS
OF UNHEALTHY AND BADLY
SLOUGHING ULCERS

[THROUGH LIEUTENANT COLONEL D. G. CRAWFORD,
M.B., F.R.S., CIVIL SURGEON, HUGHLI]

By ANUKUL CHANDRA BASU,

Medical Officer, Mandatar Dispensary, Dist. Hughli

Liquor sodæ chlorinatæ possesses antiseptic and deodorant properties, and is of course known

to every member of the medical profession, and to those even who have gone through the materia medica at least, and is not a novel thing altogether. But I believe that it is seldom or never used for dressing ulcers in hospitals, where hydrag per-chloride and carbolic lotions with boracic acid, carbolic oil and iodoform are more popular and always as a rule resorted to. While working at Tundla, in charge of the E I Railway Hospital there under Dr H G Waters, M.R.C.S. L.R.C.P. (Lond), I had the opportunity of gaining the experience from him that liquor sodæ chlorinatæ gives excellent results in a lotion form in cases of badly sloughing and unhealthy ulcers. During the whole length of my incumbency there I extensively used this lotion, and always used to keep a stock of it of 1 in 20 strength in the hospital, and its consumption is in no way less than other antiseptic lotions, in fact, the initial dressing of all ulcer cases admitted to hospital is with this lotion, and also of the operation cases whenever they present the slightest sign of unhealthy appearance. It removes the slough and dirt, and rapidly makes healthy red and granulating ulcers, which I believe would have taken a longer time by other means.

The object of my recording this is for its circulation, and request that if any one be inclined to use this lotion, he may kindly record his views and results at the same time. I close this with my best regards and most sincere thanks to Dr H G Waters for his kind instructions and for his kindly accepting my co-operation always in the treatment of all his interesting cases.

A FATAL CASE OF SNAKE POISONING

By G. G. HIRSI,

LIFETIME

In July last, a fatal case of snake bite came under my care. As it presents several points of interest, it is possible that you may be able to find room for the following account of it in your pages. The case occurred in Malakand, and the victim was an exceptionally strong and healthy sepoy, aged 18. He was admitted into hospital at 4.45 P.M. on July 9th, 1906.

He said he had been bitten by a snake about half an hour previously. The snake had escaped, and he could not say whether it was a poisonous one or not. He was an expert snake-catcher, and had been playing with the snake when it bit him, he had then flung it over the wall of the fort, and it was never seen again.

His state on admission was quite normal, apparently he was constitutionally unaffected. Two ligatures had been tied round his wrist, which had effectually stopped the venous return. He had three bleeding punctures at the back of the base of the index finger of the left hand.

When I saw him about ten minutes after his admission, he professed himself to be feeling per-

fectly well, only complaining of slight pain in the hand. This was attributable to the ligatures which were tight, and had been in place since $\frac{1}{2}$ of an hour.

The punctures had been incised and treated with dilute permanganate of potash by the Hospital Assistant, when I arrived. The hand was somewhat swollen below the ligatures. I was inclined to suppose that the bite had been that of an innocuous snake, however, I injected 30 to 40 c.c. of antivenene (which had been lately received from Kasauli and was quite fresh) under the skin of the right flank, bound up the wound, and left the patient for about an hour, while I was doing other work in the hospital. When I came back, I removed the ligatures. The patient at this time complained of slight bleeding from the gums, but otherwise appeared to be in normal health.

On the morning of the 10th, the next day, I found that the wounds had been bleeding during the night and the dressings were soaked with blood. The hand was swollen and tender and the arm so far as the elbow was somewhat swollen and boggy. He complained of pain in the hand. The bleeding from the gums still continued. There was also some persistent bleeding from a minute hole in the right upper eyelid, the site of a recent sty. On examining the wound in the hand, it was found that three small arteries were bleeding freely, and in addition there was considerable capillary oozing from the three incised wounds. The bleeding was very difficult to manage on account of the oedematous state of the tissues, and considering the hæmorrhagic state of the patient, it was not thought advisable to attempt to dissect out the bleeding points. Ligature pressure forceps, acute pressure, hot water, ice, and styptics were tried in vain, eventually the arterial bleeding was stopped by the application of the actual cautery.

The capillary oozing, however, still continued. The wound was then firmly bandaged, a pad and bandage placed on the bleeding eyelid, and astringent mouthwash given.

Ergotin was prescribed internally.

It was noticed at this stage that the blood which had escaped during the attempt to stop the hæmorrhage, still remained quite liquid in the vessel in which it had been received. One hour elapsed, after its being shed, before it shewed any signs of coagulation, and the clot, when formed, was extremely soft and flabby. The patient was questioned as to the possibility of a hæmophilic history, but none was obtainable, either as regarded himself or his family. In the evening the patient's condition was good. Bleeding from the eye persisted, but was slight, bleeding from the gums continued, they were painted with Tc ferni perchlor. Puffy swellings were now noticed in the right palm, the right antecubital fossa and the front of the right shoulder, these were tender on palpation, and were put down as subcutaneous hæmorrhages.

The dressings were soaked with blood and serum which still continued to ooze from the wounds.

he left hand was still much swollen and very tender. 30 c c of antivenene were again injected. On the morning of the 11th, the third day, the oozing still continued, but was now chiefly serum.

Just before my arrival he had had a considerable hæmorrhage from the nose. He was looking pale but was not markedly anæmic. The bleeding from the gums and eye had stopped, the con-
 dition of the hands and arm was unchanged.

On the morning of the 12th when I again saw him, the oozing had stopped. The pulse, however, was weak and thready, and pallor was marked. I suspected some internal hæmorrhage but could find no further signs of it. There was some tenderness in the upper abdomen. Saline solution was injected per rectum. The left hand was still swollen. The puffv swellings previously noted in the right hand and arm were turning blue.

The following day, the 13th, the patient appeared much better. The pulse was stronger, the oozing had entirely stopped, no further hæmorrhages had apparently occurred, and the pain in the left hand was much better. In the evening the temperature rose to 101.4, this, however, was not thought to be serious, and I was not called to see him.

However on the next day, on visiting the hospital, I was surprised to find the patient's temperature to be 103. The pulse was weak and rapid, he was passing motions and water in the bed and was semi-delirious.

He complained of severe pain in the upper abdomen, in the region of the transverse colon. An enema was given with good result, but the pain still persisting he was given morphia. There were no traces of blood in the excreta, which were quite normal in appearance.

The condition of the hand and arm had improved, the swelling had diminished, and the wounds in the finger looked decidedly healthier. There were no signs of fresh infection of the wound or of suppuration.

No cause of the rise of temperature being discoverable, I prescribed quinine and stimulants.

In the evening the temperature had risen to 104, the pulse was now full and bounding, but very easily compressible, the respiration was rapid and the lips and tongue dry. He was still delirious.

On the morning of the 15th the temperature had fallen to 100.5. The pulse was weak and thready, respirations somewhat hurried and shallow, and the face drawn and anxious, and the general condition very bad.

This collapse was somewhat sudden and surprising, but it was probably due to the effects of the recent high temperature on a constitution weakened by hæmorrhages and the depressing influence of a snake toxin. Stimulants, rectal injections, etc., were tried in vain, the patient sank all day, and died at 8 P.M. on the same evening, six days and some hours after having been bitten by the snake.

The condition of the wound of the hand, at the end was healthy, the swelling had considerably subsided, and the healing process had begun.

The case differed so much from the ordinary cases of snake-poisoning that are met with, that an account of it was sent to Major Lamb, I.M.S., who was lately Director of the Pasteur Institute of India, who very kindly commented upon it as follows:—"It is an extremely interesting account as it gives in detail the symptoms which one would expect to occur in any chronic case of intoxication with the poison either of *V. Russellii* or *Echis Carinata*. The various hæmorrhages and the great diminution of the blood coagulability which was observed, are typical of viperine poisoning, and are never seen in cases of poisoning with the venoms of the cobra or of the krait. The question of the failure of the antivenene to avert a fatal result is interesting. If the antivenene was got from the Pasteur Institute of India where I know a serum efficient for both cobra and daboia venoms is prepared, then I should conclude that the snake which caused the bite was *Echis Carinata*. The symptoms and duration of the illness support this conclusion."

(The serum used was obtained from the Pasteur Institute of India.)

MALARIAL PNEUMONIA

Is there such a thing?

By J. HAY BURGESS, M.B., F.R.C.S.,

CAPT., I.M.S.,

Malakand, N.W. Frontier.

OSLER in his book writes in one place that—"A form of pneumonia directly dependent upon the malarial parasite is unknown." Later on, however, he is less dogmatic and states that—"Pneumonia is believed by many authors to be common in malaria and even to depend directly upon the malarial poison occurring either in the acute or in the chronic forms of the disease. I have no knowledge of such a pneumonia."

Scheube, however, in his book—"The Diseases of Warm Countries" affirms that—"There seems no doubt that pneumonia may occur in conjunction with malaria. My opinion, however, is, not that the pneumonia as described in this form is a complication, but that it represents an expression of the malarial infection itself." It may be conjectured also, that Manson believes there to be such a thing as malarial pneumonia, a clinical entity apart from a mere complication. Because on page 153 of his book "Tropical Diseases," 1903, I read that—"It is sometimes impossible to diagnose—malarial pneumonia from croupous pneumonia." These are all the books that I can bring to bear on the subject in this "Across the Frontier" Station. I myself have always scouted the idea that there can be a form of pneumonia dependent upon the malarial parasite. In fact, in my copy of Scheube's book I see the most unparliamentary expression of "Rats!" noted in the margin opposite the sentence I have extracted from that book and written above. But, on the contrary, in my copy of Osler's medicine I have carefully underlined the sentence "A form

of pneumonia directly dependent upon the malarial parasite is unknown." Such was my idea, now, however, it has changed.

In Chakdara fort, last year, 1906, it can be safely averred that not one single man escaped the ravages of malarial fever, every man indeed, British and Native, suffering frequently, so that, when the regiment moved here to Malakand in November, it might be truly called fever-stricken. Many men still suffered from ague attacks, many had enlarged spleens, and one and all were anæmic and debilitated. If anything could call forth a malarial pneumonia, surely Malakand, with its cold, piercing winds howling through the cold, draughty, fireless barracks ought to.

As a matter of fact, from the 16th November 1906 to the 31st January 1907, there have occurred 24 cases of pneumonia with ten deaths (a somewhat alarming percentage of fatalities). Some of these cases have exhibited most striking peculiarities, and it is these peculiar cases which have been the means of changing my opinion.

The first case which aroused my suspicion is here quoted in full, and attached is his temperature Chart No. I.

This man returned from one month's leave from the district of Rawal Pindi on the 31st December 1906. It seems that, on the 30th, while in the train, he was suddenly seized with a rigor and pain in the chest (a pain according to him similar to what he had experienced when he had pneumonia some ten years ago). On arrival here he was, according to the custom, isolated in a tent outside the fort where the Hospital Assistant visited him and found his temperature 103.4 on the evening of the 31st. I visited the man on the morning of the 1st January with the man's commanding officer and made the following notes on the spot. (The notes are somewhat amplified as in my original notes I simply write words descriptive of what I see without any regard to the formation of sentences or the style of English.)

Man tall and gaunt, lying on a charpoy in a tent, with obviously increased respirations 36 to the minute, obvious owing to his *alæ nasi* moving in response to and synchronously with his chest. The man looks ill and anxious, and occasionally at the end of expiration gives vent to a respiratory grunt. He complains of pain in his left axilla which, he says, prevents him coughing properly and keeps him from taking a deep breath.

Pulse—full and bounding, equal in force and frequency, of good tension. Rate about 120 to the minute. Heart healthy except that, perhaps, pulmonary second sound might be called accentuated.

Lungs—Respirations 36 obviously shallow. Movements equal on both sides. Nothing abnormal in front. There is dullness on percussion in the left axilla and left back to just above the level of inferior angle of scapula. Here the respiratory sounds are suppressed and crepitations (fine and inspiratory) are heard. Elsewhere lungs appear normal. Vocal resonance and fremitus are not

increased, sputum mucoid and somewhat viscid and distinctly blood-stained (uniformly).

Abdomen—The spleen is slightly enlarged downwards, the lower margin being felt just below the left costal edge with perfect ease. Otherwise there is nothing to note. (From the man's medical case sheet I see that his splenic enlargement has been previously noted.)

(I immediately diagnosed the case as pneumonia and ordered his removal to a special ward inside the fort.)

2nd January 1907—Temperature this morning normal and the man seems a little better. The respirations although increased are now only 27. Cough great, and sputum profuse, but now not uniformly blood-stained, one or two pieces only being rusty in colour. Heart as before. Lung also as before except that now at the left back there is bronchial breathing and bronchophony and increased vocal fremitus. There is no distinct tubular breathing, that is, the local signs continue, but the general symptoms have abated.

3rd January 1907, 10 a.m.—Called to see the man, as the Hospital Assistant said his pulse was very weak, Temp 100.5°, Resp 32. This I found to be the case and ordered an injection of strychnine m.v. and brandy 3i to be given by mouth. 12 a.m. Pulse stronger. Left lung (lower lobe) typically pneumonic, there being present shrill harsh tubular breathing most marked just internal to and below the inferior angle of scapula. Over the dull area there are heard crepitations with increased vocal resonance. Vocal fremitus is also increased.

Blood taken and shows—

Polymorphonuclears	62 5%
Small Mononuclears	22 3%
Lymphocytes	14 4%
Eosinophiles	0 8%

Malignant tertian parasites are seen, but no crescents. Inj. quinine hydrobrom acid gr. x ordered every day.

4th January 1907—Although temperature is normal and the pulse good the man seems strangely weak. Respirations are 24, otherwise lung signs are as before. Although left axilla is dull, it does not show tubular breathing.

6th January 1907—Tubular breathing and crepitations, and ægophony opposite lower angle of left scapula. Sputum profuse, tenacious, and difficult to bring up and still rusty in colour.

7th January 1907—Sputum still rusty. Crepitations looser. Otherwise as before.

9th January 1907—Left back dull, but no tubular breathing to be heard. Breathing is somewhat bronchial, and râles are heard shifting in position. Heart m.l. Pulse regular in frequency and force, of good amplitude and moderate in tension.

10th January 1907—Left back seems deadily dull (like fluid). The breathing, however, is bronchial and ægophony is present. The needle shows no fluid.

11th January 1907—Left base dull with increased V.R. and V.F. and ægophony in places.

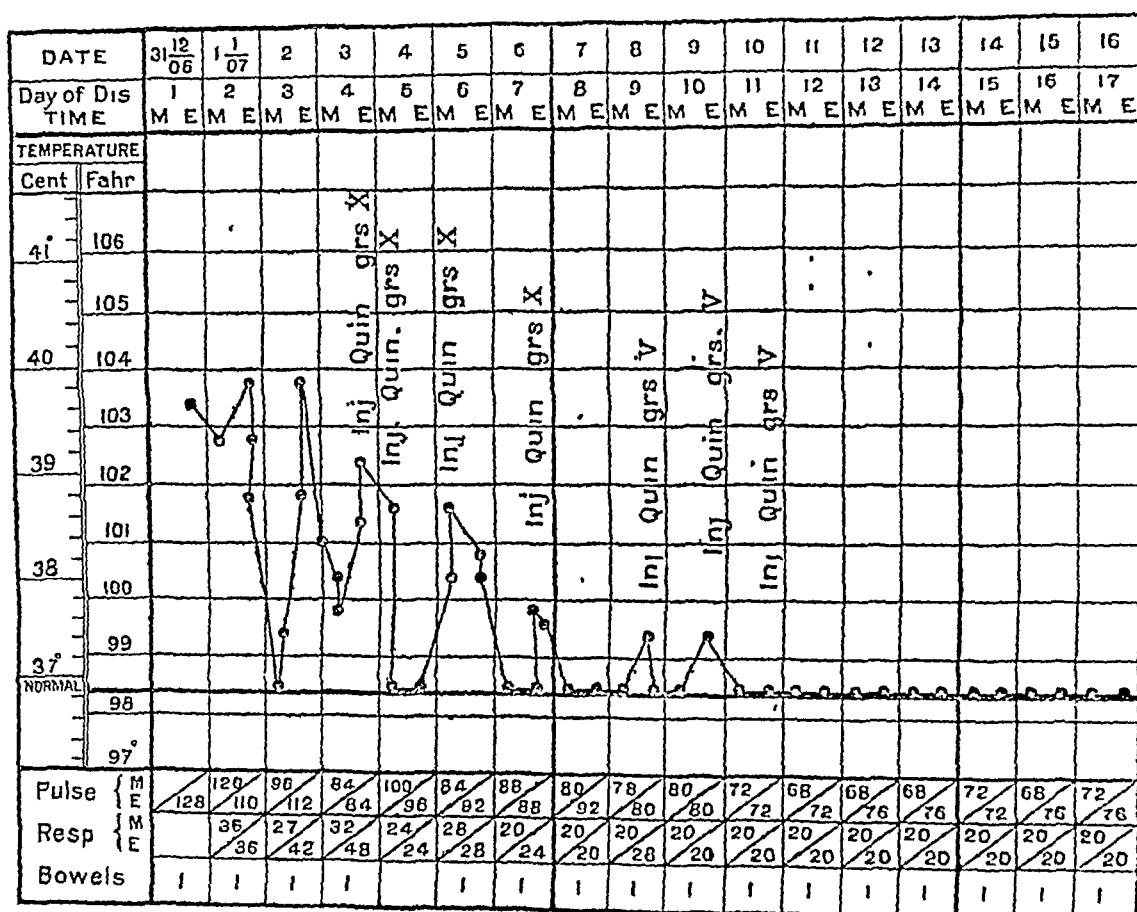
MALARIAL PNEUMONIA

Is there such a thing?

By CAPT J HAY BURGESS, M.D., I.R.C.S., I.M.S.,

Malaland, N-W Frontier

CHART I.

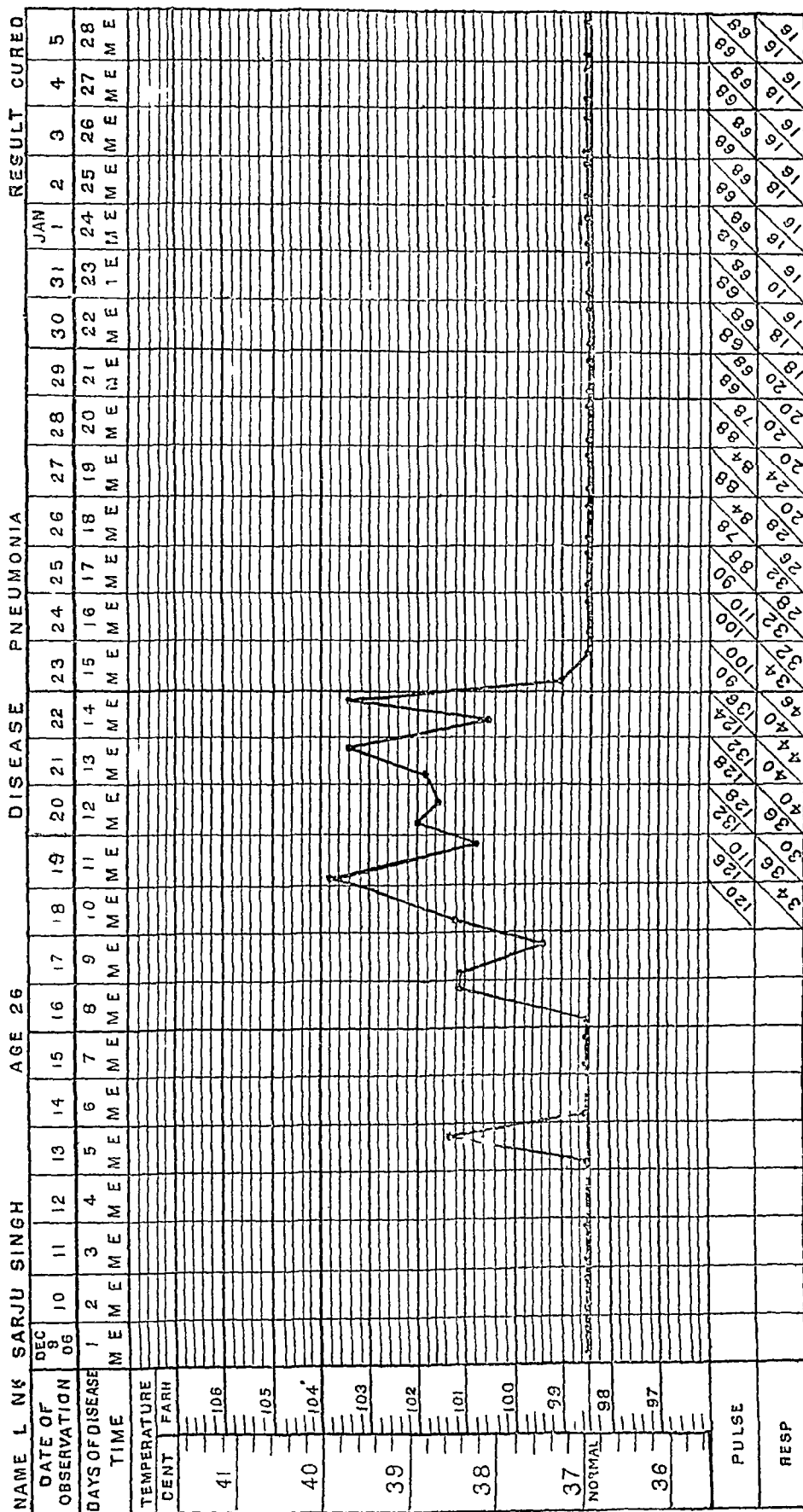


MALARIAL PNEUMONIA

Is there such a thing?

By CAPT J HAY BURGESS, MB, FRCS, IMS,

Malakand, N-W Frontier



Breathing bronchial and decidedly harsher than the breathing on the right side

14th January 1907 —Dullish left base No abnormal signs except that at the inferior angle of left scapula, the vocal resonance has a tendency to ægophony

3rd February 1907 —Lungs normal

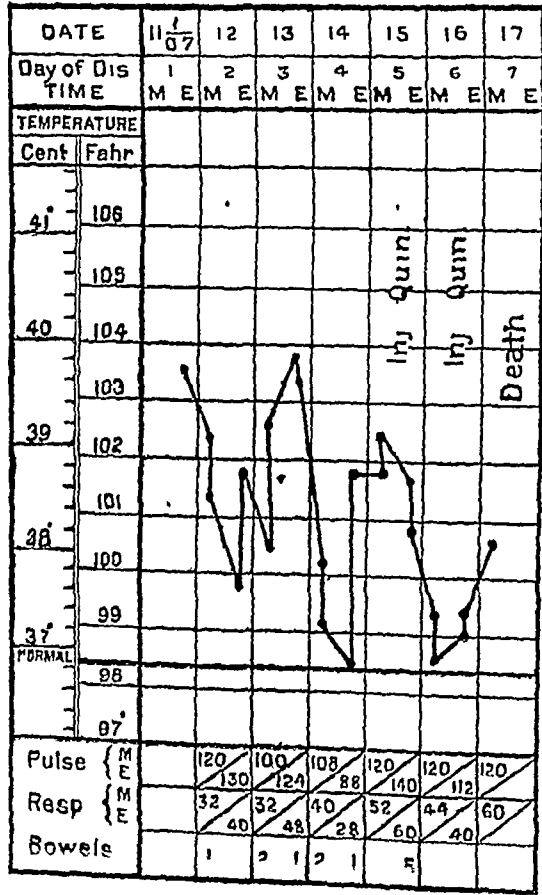
That this was a typical case of pneumonia from the physical signs I can absolutely vouch for. There were present —Pain in the chest, blood stained sputum, increased respirations, dullness, tubular breathing, crepitations and increased vocal resonance and fremitus. And yet the temperature chart might be that of a malignant tertian fever. His blood showed an increase in large mononuclears also the presence of malarial parasites. An enlarged spleen was evident, and the man had suffered from frequent attacks of ague. During the apyrexial intervals there was a subsidence in the general symptoms which, however, increased again in intensity during the pyrexial intervals. This, in my opinion, was a genuine case of malarial pneumonia, and I should say dependent for its origin and course on the malarial parasite.

The man's condition, it is true, was never grave except on the morning of the 3rd

Légué is reported in Scheube's book as having actually found malarial parasites in the expectoration as well as in the blood. In my case, however, I never found any parasites (malarial) in the sputum, but found diplococci (probably pneumococci, streptococci and streptococci).

The next Chart No. II was that of a somewhat similar case

CHART No. II.



In this case, it is true, I never found the parasite in the blood, yet his temperature chart exhibits a tertian periodicity (malignant). Also the man had an enlarged spleen and his blood showed an increase in the large mononuclears, the blood count being actually as follows —

Polymorphonuclears	61 5/8
Small mononuclears	17 2/8
Large mononuclears	17 2/8
Eosinophiles	1 1/8

Never at any time had he however what might be termed a leucocytosis. He had all the typical signs of symptoms of pneumonia.

In contradistinction to case No. I, however, the apyrexial intervals were not accompanied by any alleviation in the general symptoms. Unfortunately I resorted to quinine injections, in my opinion too late in the case, a lethal result ensuing.

The third chart, like which I have had many others, shows again a different and more common way in which malaria and pneumonia may be combined. This man had been suffering from quartan fever in the lines and was admitted on the 9th December. A paroxysm was due on the 10th, but the chart does not show this probably because the temperature was taken too early that evening before its occurrence. The 13th, however, shows a paroxysm as also does the 16th, on which date I observed the quartan parasite. Quinine was then given daily. Pneumonia developed of which the signs were not evident until the 18th. Crisis occurred on the 22nd. There were no signs during the course of the pneumonia and no parasites were seen. Such cases Osler acknowledges having seen. A fourth way in which malaria and pneumonia may be combined is where in the course of a true pneumonia a rigor due to the malarial parasite occurs without in any way influencing the course of the pneumonia, the parasites soon disappearing on the introduction of quinine. Although this combination is undoubtedly fairly common, I can produce no charts descriptive of it.

THE PLAGUE IN KASHMIR

By A. MITRA, L.R.C.P., L.R.C.S. (Edin.),
Chief Medical Officer, Kashmir

KASHMIR possesses a recorded history in Raj Tarangini of all important events which happened in the country for a long time past, but no record of any epidemic disease similar to plague is available.

The fact that one of the common abuses used by the Kashmiri is "piyoi tou" or "plague take you" makes one think, however, that the people had previous experience of this dreadful disease.

Nawab Mautamad Khan, one of the paymasters in Jehangir's Army, says in Ikbal Nawah that plague raged in a severe form in Kashmir.

PLAGUE NEAR KASHMIR

In Jammu, 155 miles from Kashmir, and with which place it is in close relationship,

officially and commercially, plague has been present since 1901

In Poonch, 26 miles from the borders of Kashmir, there was plague in the autumn of 1902

Rawalpindi, which is connected with Kashmir by a road, gets plague every year

Thus plague being in existence so near Kashmir, it was obvious that sooner or later it was highly probable that Kashmir would be visited by the disease

INSPECTION OF TRAVELLERS

There were arrangements for examination of travellers coming to Kashmir from Jammu and from Rawalpindi. One case, very probably of plague, coming from Rawalpindi, died near Uri, 60 miles from Srinagar, on 8th October 1903 and was cremated there. Soon after this elaborate arrangements for disinfection of clothes by Bowman's Disinfectors were about to be made at Uri when on the 13th November a tonga with a veiled native woman and two servants passed Uri. In this tonga came the first case of plague in Kashmir. The inspectors failed to detect the disease. The order to them was to take the temperature of every traveller. Their subsequent report showed that all the occupants of the tonga at the time of inspection had normal temperature.

HISTORY OF THE FIRST IMPORTED CASE

On the evening of the 18th November 1903, a man was found at the gate of State Hospital in Srinagar with following symptoms —

Fever, temperature 100°F, anxious look, slightly wandering mind, inguinal glands of both sides swollen. He was left there by a hired ponyman from Kralpura, a village six miles from Srinagar. The man said he was a servant of a Mrs B——, who was camping at Kralpura. The symptoms at once suggested plague, and the man was immediately removed in a tent away from the city in a large open ground. Mrs B—— a Kashmiri woman, lived near Rawalpindi. She left that place by tonga with two servants on the 11th November. The tonga was booked in the name of Mrs B—— who had a Burkha (veil) on her. They reached Murree the same evening and stayed for the night in Curzon Rest House. Ghulam Mohamed was the cook and Abdul Rahman was the khidmatgar. Next day they left Murree and passed Kohala at mid day where they were examined at the inspection post and provided with the usual passports in which they were entered as "In good health." They reached Ghari at night. Ghulam Mohamed was not feeling well that night and could not cook food for his mistress. They left Ghari next morning, passed Uri at mid day, where at the inspection post they were again examined and passed. They reached Srinagar at 10 P.M., and engaged a boat. Ghulam Mohamed did his usual work that night. They were in this boat for two days. On the 16th Mrs B—— left in a dandy for Kralpura, the two servants accompanying her on foot. There they went into the house of Subhan But, a relative of Mrs B——. Ghulam Mohamed occupied a small room on the ground floor of the house. On the 16th, 17th, and 18th Ghulam Mohamed could not do his usual work and was laid up in the room. Several grain dealers and cloth merchants stopped in this house during this period. The patient Ghulam Mohamed died on the night of the 19th. This was the first imported case in Kashmir.

MEASURES TAKEN

1 The body was buried in a grave 10 feet deep with 2 feet of carbolate of lime surrounding it. Only two persons helped in the burial.

2 All articles which came in contact with the patient, including bedding, tents, etc., were burnt.

3 There were three contacts, a hospital assistant, one khidmatgar and one sweeper. They were segregated in camp, usual measures of disinfection being taken.

4 At Kralpura the house of Subhan But was burnt together with every thing contained in it, also the grains kept in the compound of the house by dealers.

5 Mrs B——, her servants and all members of Subhan But's house, the ponyman who brought the patient to the hospital, and all suspected contacts were segregated in camp. None developed plague.

THE SECOND CASE

About 500 yards from the tent in which the plague case was kept, a police guard of four constables was camped to prevent any communication with the plague case.*

After the death of the imported case the attendants were in segregation and the police guards were on watch over them. On the morning of the 25th one of the constables was found ill with slight rise of temperature, pain in the chest, very anxious look, and spitting of blood tinged sputum. On physical examination slight dullness and rough breathing were found. Evening temperature was 101°F. When I saw him in the evening, I found him slightly delirious, and I thought the man had pneumonia from exposure to the severe cold of November in an open field. There was no glandular enlargement. He died at night. When I heard of his death, I suspected pneumonic plague. The body was accordingly buried in a deep grave in an open ground. Some relatives of the deceased and the mullah assisted in the burial, but their application to remove the body for burial in the city near their house was refused.

How this man contracted plague is a mystery. He was supposed not to have gone near the patient at all. I have heard a story, but it is not confirmed by any eye-witness. This constable, probably with the connivance of his brother, who was the hospital attendant on the plague case, went into the tent and handled the dead body for the purpose of stealing anything which could have been found. It is further said, that he put his mouth on the finger of the deceased to bring out a ring, biting it with his teeth. If this story is correct, which I believe it to be, plague commenced in Kashmir from a crime.

On the morning of the 28th, that is, two days after the death of his brother, the police constable, the hospital attendant who was in the segregation camp, was missing. As soon as the matter was brought to my notice, I thought that the man must have got ill and absconded somewhere. In bringing this matter to the notice of the police, I asked them to take the same steps as they would take to find out the whereabouts of a murderer, and pointed out that this man, wherever he was, would probably infect the country if he was plague-stricken, which probably he was. He of course died, but where and how, we do not know.

* Subsequent events will prove that placing reliance on this police guard was a mistake.

Sudden Outbreak of Plague in Srinagar—Ten days passed without any further development of affairs. On the morning of the 11th December, we heard of several deaths in two houses in Srinagar. The following was found—

In the house of the police constable who died in camp, a man died on the 10th December, another on the 11th. There were five persons living in the house. In another part of the town, the first case occurred in the house of a relative of the police constable who himself was also a police constable and had attended the two patients in the first house, 5 deaths had already taken place within six days and three persons were found ill. They were all relatives of the police constable, his father, mother, sister, wife and children. A sister-in-law living in the next house also died. The symptoms were, pain in the chest, slight fever, 101°F , serous sputum, wandering mind, staggering gait, tongue black in centre. They all died the next day.

Within a few days eight different centres of infection appeared in Srinagar, all patients being contacts and relatives of the cases in the house of the police constable who died in camp.

How the Infection Spread—There are two probable stories, both of which may be correct, and both incidents might have occurred simultaneously.

1 The dead body of the police constable, who died in camp and who was buried outside the city, was exhumed by his relatives, brought in his house and reburied there. Police constables being concerned in the matter, their comrades, who must have known of this, kept silent.

2 The hospital attendant who got ill in camp went to his relatives' house in a village 17 miles from Srinagar. His relatives from Srinagar went to attend on him there and probably brought the dead body to Srinagar.

So the infection started from either the police constable or his brother, the hospital attendant.

News were received at this time of an outbreak in the village called Geru. This is either due directly to the hospital attendant or through his relatives coming to Srinagar to attend on their relatives and returning to Geru with the infection. Unfortunately no one lived to tell the true tale.

Measures Taken—These may be briefly stated as follows—

(1) Evacuation of the house where plague case was discovered. Its burning wherever possible after payment of full compensation of house and property. Where this was not possible, it was infected by perchloride of mercury, door and windows were left open, holes were made in walls and roofs, and the main door was closed up and guarded.

(2) An open place nearest to each infected centre was selected, where temporary huts were put up, in some of which actual cases were kept, and in others at a distance all contacts and inmates of the infected houses were removed.

The huts were built with bricks and every possible arrangement was made for comfort, though it was obviously very difficult to do so in the December climate of Kashmir with

severe frost and heavy snow. Stoves were provided. Warm clothing and bedding were given in abundance, fuel and charcoal, food, including tea and meat were also given.

Subsidiary Measures—1 A careful system of registration of deaths in the city was organized and arrangements were made for the reporting of suspected cases and their inspection. As all cases were directly or indirectly connected with police constables, it was sometimes very difficult to get a report in time.

2 A gang of coolies, first inoculated with Haffkine's prophylactic, was engaged for disposal of the dead and disinfection, in which latter work they were trained.

The attitude of the people—In the beginning the people in Srinagar would not believe that it was plague which appeared in the city. Most absurd stories were circulated, and many attempts were made by misrepresentation to discredit the agencies who were fighting at great personal risk for public good. The superstition of the people was that the police constables and their relations were only suffering for their sins. Many educated people, from whom better things were expected, actually tried to cause popular opinion against us by making false representations about discomfort in the camps and spreading the rumour that it was only pneumonia and not pneumonic plague.

But in spite of all difficulties the measures were strictly carried out with every possible attention to the comfort of the people who were segregated, with the result that there was no new centre of infection and no new cases anywhere in the vast, congested and insanitary town of Srinagar, except in the isolation camps or in the few infected houses till the disease died out.

In the carrying out of plague measures no help of any kind was received either from the people or their leaders. Everything was done through official agencies. No heed was paid to the clamour of the people and measures which were thought right and suitable were carried out with a firm hand. When plague ceased in Srinagar and news of hundreds dying in the rural districts reached the city, a large deputation waited on us begging to do some thing to prevent its re-introduction into the city and to repeat the measures which were previously taken, should it take place.

DISTRICTS

I have mentioned how the infection reached Geru, a village 17 miles from Srinagar. In this village the Lambardar, the village headman, who was the richest man in it and had a large house with large quantity of grain stored and a number of cattle, was the first to die. His three sons died soon afterwards. This man had relations far and wide in this and neighbouring villages, who came to sympathise with the family. From Geru it spread to Charan, from Charan to Sali, and so on till it reached Tril, a very populous village 20 miles from Geru. Our action in this district was in the beginning the same as in Srinagar. When, however, it spread over many places, the measures had to be relaxed

Wherever possible, the sick and the contact were separated and houses were disinfected. A few houses in which the first cases occurred were burnt, others were disinfected by perchloride of mercury.

From Srinagar the infection also went to another village named Kripalpur, near Pattan, through a relative of the constable. One house was infected which was destroyed, the sick and two contacts were segregated, of which one subsequently developed plague. There was no more case here afterwards.

News came from villages in the neighbourhood of the Woolar Lake, that a large number of men suddenly died there in a few days. The police officer hinted at poisoning. It was, however, found out that plague of virulent type was raging there for over two weeks, and about 20 persons died. It was concealed by the Police Chowkidar and Lambardar, both of whom afterwards died of plague. It rapidly began to spread in the neighbouring villages.

A man came from Geru to Gund Jahangir and died there on the day of his arrival. Those who helped in the burial of the corpse next got the disease.

These villages are small islands on the Woolar Lake. They were totally submerged during the summer flood and all huts were constructed afterwards. The soil reeked with products of decomposition of small fish and water nuts, which latter is the chief food of the inhabitants. They drink very filthy water. Corpses were buried in shallow graves close to houses. In a short time these infected places became very insanitary with a peculiar offensive smell due to decomposition of organic matter. The villages suffered badly. Practically nothing could be done here as no measure was feasible. The virulence, however, gradually lessened, but the epidemic slowly continued for six months.

On the south of the Woolar Lake there is a large circular strip of land surrounded by water and intersected by canals. On this are several villages, many of which are flooded when water rises high, others, being on higher level, are always dry. The land is very fertile, and people are much attached to their tenements. The situation is open with the vast expanse of the great and blue Woolar Lake in front with snow clad mountains on the back ground. Standing at this spot, it strikes one that plague probably never had a more picturesque abode. Except in few instances the houses are built in a row with a pretty good space between each. If instead of being hovels they were better built houses, one would have said that they were neatly arranged villas with vegetable gardens. The interior of the huts, however, present a different picture. On the lower story are the cattle and poultry with one or two small windows, in the middle story the family live, in this story there is no window except one in a few huts. The upper attic is used for storing fuel, dried cowdung, etc., in winter, and in summer for living or cooking purposes. It was easy to realize why plague, introduced into these huts, would have a luxuriant growth within them. It was a pitiable sight to see some of these villages nearly depopulated, such as Boon, which was only a few months ago, a flourishing little village with neat and well built houses. Signs of opulence of the village still existed, many houses were empty, others were occupied by distant relatives come from other parts of the valley and occupying the houses and property left without any immediate heir. Even the Lambardar was a small boy who has just stepped into the shoes of his father, the old Lambardar who recently died of plague.

Sopur was the largest town near these villages. There was one imported case in it which was dealt with in the usual way. No more case occurred there. It was indeed very fortunate that the infection was not re-introduced to Srinagar from these villages from where a dozen boats with water nuts used to come to Srinagar daily. In fact, one such boat with a plague case was detected on the river midway between Srinagar and the Woolar Lake. The conditions of life in

these villages during the month of January and February were extremely unfavourable. Every thing round was frozen. A bleak wind always blew. Very little food, except water nuts was available. All were paralysed with fear, grief, cold and inanition, and nobody took care of the sick or came forward to bury the dead.

Type—The first imported case was of bubonic type, the next infected case was pneumonic. Almost all subsequent cases were pneumonic, except a few about 45 in 1974. Many were, no doubt septicæmic. It has been suggested that in winter the lungs were more susceptible to harbour the germs, owing perhaps to the presence of catarrh, bronchitis, etc., but this theory can hardly cover all grounds. It is, however, now established that under local conditions the bubonic variety may change into pneumonic, and may persistently remain so during an epidemic.

Mode of Infection—In the pneumonic cases the principal means of communications is direct infection through sputum, which is loaded with bacilli and which is sprayed about when the patient coughs or even when he speaks. In the Kashmir epidemic this has been the sole factor in its dissemination.

Thus during the epidemic those only who came directly in contact with a plague case caught the infection and nearly all died after short illness. It was winter, rats were within their holes almost always on the top of houses with their winter food stored therein, snow on the ground prevented their immigration from one house to another, a previous flood killed almost all rats in the fields and specially in the Woolar Islands, and the rapid death of plague cases left no time for the germs to settle and infect the soil for the rats to be infected therewith. Owing to these causes no mortality among rats were observed. In fact, not a single sick or dead rat was found in any of the infected places, though close watch was kept. To this may be attributed the limited spread of the epidemic and its rapid subsidence. In a Kashmir winter, fleas, flies and biting insects are inactive. If the type was bubonic there would have been more chance of rat infection, and prolonged epidemic and its greater spreading through infected dwellings, linen and clothes.

The infection of plague can be communicated—

I From man to man—

- 1 Directly through the respiratory tract in pneumonic cases
- 2 Directly by inoculation by means of abrasions in the skin or mucus surfaces, both in pneumonic and bubonic cases
- 3 Indirectly through infected dwellings and clothes, either through respiratory tract or inoculation

II. From rat to man:—

- 1 Directly through germs deposited by plague-stricken rats in their evacuation

- 2 Indirectly by rat-fleas leaving the cold body of a dead rat and biting man
- Pulex cheopis* and *Pulex irritans* which have been caught on rats in India bite human beings

III From biting insects and flies to man —

- 1 Direct inoculation
- 2 Indirectly by sputum, pus, etc

In the excrement of rats, if deposited in a moist place specially in sacks of grain, in which carbonic acid may be evolved by moisture and fermentation, the germs may retain their vitality for a long time

The epidemic in Kashmir has proved that plague bacillus is unaffected by cold *per se*

INOCULATION

Every attempt was made to persuade people to be inoculated. In Srinagar the popular feeling was just beginning to be favourable when fortunately plague abated and with it the zeal cooled down. A large number of men were inoculated in and near the infected villages. We were ready with 13,473 doses of the lymph.

In Srinagar a gang of 8 coolies were inoculated before employment in disinfection work and disposal of dead bodies. Of these one caught plague 21 days after inoculation and died.

The symptoms began usually soon to five hours after inoculation commencing with slight feverishness and signs of local inflammation. General discomfort and pains about the joints with headache followed within 24 hours. Temperature in large majority of cases did not go up higher than 102° F, though in a few cases it reached up to 105° F. The high temperature and other symptoms usually began to subside after 36 hours. The inoculated part remained tender for about a week. There was no untoward symptom of any kind except in one case in which cellulitis extending down to the forearm occurred and the fever continued for a few days. It was a case of chronic malaria. In some indigestion with diarrhoea was noticed for three or four days.

All inoculations were done under strict anti-septic precautions.

CONCLUSIONS

The plague lasted in Kashmir from November 1903 to August 1904, but the virulence was only from December to March. In the city of Srinagar its duration was for one and a half month only, the total number of cases were 56, all fatal. In the districts there were altogether 1,443 cases with 20 recoveries. The recoveries being bubonic cases, which was seen at the end of the epidemic.

There are people who say that this successful suppression of the disease was attributable chiefly to the nature of the climate, the altitude of the country (5,200 ft) and other favourable physical causes. This to my mind is quite an unwarrantable claim. It is due entirely to the fortunate circumstance of our being allowed in

the case of Srinagar to deal with the first few cases in a diastolic manner, *viz*, burning the first few foci and segregating the contacts. In the districts evacuation of houses and segregation of contacts proved the desired result.

Though not venturing to draw any conclusion from it, I must mention the fact that throughout the course of the epidemic in Kashmir no mortality was noticed among rats, though a very careful watch was kept.

The fact that almost all cases, with a few exceptions, were of a pneumonic or septicæmic kind naturally raises the question why it was so. I think that when the mode of infection is through blood by fleas, blood parasites, etc., the type is usually bubonic, while if the infection is directly inhaled by lungs through sputum, etc., the type assumes the virulent pneumonic or septicæmic type. In a large number of cases the two latter types are indistinguishable.

Instances after instances were seen in which an infected hut was evacuated and disinfected by mercury and phenyle, the house was locked up, a month or six weeks after it was opened and occupied, immediately after a new case would occur. The disinfection therefore was ineffectual. The question arises how did the germs, unaffected or untouched by the disinfectants, live and retain their vitality for six weeks. In almost all instances there was no grain or food of any kind in the rooms, no dead rats were found, nor any cattle lived therein. Why did not the germs die of inanition?

It is not also known what variations in morphological and cultural characters occur, if any, during the saprophytic existence. The solution of these bacteriological problems connected with plague bacillus will greatly help in the practical measures for combating with the disease.

The disappearance of plague from Kashmir, no doubt, points to the theory that the parasitic bacteria of plague failed gradually to transmit their species through and maintaining their existence in the animal body. They were gradually reduced to a saprophytic existence only, and thus the pathogenicity ultimately disappeared.

I also venture to put a suggestion that the bacillus *pestis* has the same relation with pneumococcus (both Friedländer's and Fraenkel's) as *B. Typhosus* has with *B. Coli communis*, at least clinically, both probably containing analogous intracellular poison.

To my mind the true light on the proper method of suppressing plague is therefore yet to come from the Bacteriological Laboratory.

I took special care to find out if during the prevalence of plague there was any special prevalence of pneumonia amongst the people of infected localities. The result of the enquiry distinctly showed that it was, and one instance was found in which three members of a family died one after another of acute croupous pneumonia.

There could be no mistake these cases were kept under my personal watch, and they were found to run through a typical course of acute croupous pneumonia

A Mirror of Hospital Practice.

A NOTE ON TWO NATIVE REMEDIES FOR ACUTE DYSENTERY

BY H E BANAIWALA

LIEUT COLONEL, I M S,

Civil Surgeon, Khandwa, C P

My attention was drawn a year and a half ago to two native remedies for acute dysentery to which I have given sufficient trial in dispensary and private practice, and, as the results have been almost invariably satisfactory, I think they should have a further trial at the hands of others

The first is the juice of the leaves of "*Jasminum Sambac*" known in Bombay as "Mogra," and in Bengal as "Bal-phul," "Motaya," "Mogra." The dose for an adult is seven leaves pounded in a glass mortar with 1 oz of water and a little sugar to disguise the taste. One dose early every morning on an empty stomach for three or four days is all that is necessary. In severe cases, a dose morning and evening may be required. After the first dose I have generally noticed an immediate improvement—the griping being less, the motions becoming less frequent, more feculent, and containing but little mucus. I am indebted to Khan Sahib, Senior Hospital Assistant Syed Hyder Hossein for the above prescription.

The second is a household remedy among the Parsees in Bombay.

Take 4 oz of "*Chunar Sakkar*" which occurs in large yellowish crystals, half a tola of whole cardamoms and 8 oz of water. Dissolve the sugar in water, shell and pound the cardamoms, and add to the above. Put over a moderate fire, and let it boil for five minutes. When cool, give it in one dose. For an adult two such doses should be given in the 24 hours.

I remember the case of an European child with severe symptoms where I had tried everything without effect, and where it acted like a charm, saving the life of my little patient.

A CASE OF TRANSVERSE FRACTURE OF THE PATELLA FRAGMENTS WIRED BY THE OPEN METHOD

BY L G FISCHER,

MAJOR, I M S,

Civil Surgeon, Dehra Dun

SUB-INSPECTOR of Police, Fatehuddin, a strong, robust man, doing duty at the Railway Station, Dehra Dun, slipped backwards on the greasy

pavement near the latrine on the 31st March 1906, and in endeavouring to recover himself, fractured his left patella transversely. When brought to hospital, the man was unable to stand or to raise the left leg, and the fragments of patella were found to be widely separated, while the joint was considerably swollen. The limb was placed on a McIntyre splint and kept completely at rest until the swelling had subsided, evaporating lotion being applied. The operation was performed on the fifth day after the accident.

Operation—The parts having been rendered thoroughly aseptic a vertical incision was made slightly to one side of the middle line exposing the fragments. An extensive blood clot, lying between the fragments, was turned out, and the fragments were drilled obliquely from the anterior surface to within a short distance of the posterior surface. A stout silver wire was then passed, twisted tight, and the twisted ends cut short and hammered down with an aseptic mallet. The aponeurosis was then brought together, the skin wound closed, and the limb placed on a McIntyre splint. The wound healed by first intention. A month after the operation the splint was removed and passive motion applied. The patient was discharged from hospital on the 9th June with a joint as useful as it was before the accident. Skiagrams are herewith attached. The points to note are—

(1) Owing to the extensive blood clot between the fragments, no method of wiring the fragments or bringing them together, except the open method could have attained so good a result.

(2) Where antiseptic treatment can be insured, and vigorously carried out, suppuration will not occur, and the open method need not be feared.

(3) The skiagrams taken at the X-ray institute here, appear to shew that the twisted ends of the wire have not been sufficiently hammered down. They cannot, however, be felt beneath the skin, and no discomfort is complained of. The skiagrams are interesting, No 1 taken some six weeks after the operation shewing that some softening of the bone had taken place, No 2 shewing the formation of compact bone.

THE VALUE OF CREASOTE INUNCTION IN MEDICINE

BY HENRY S WOOD,

MAJOR, I M S,

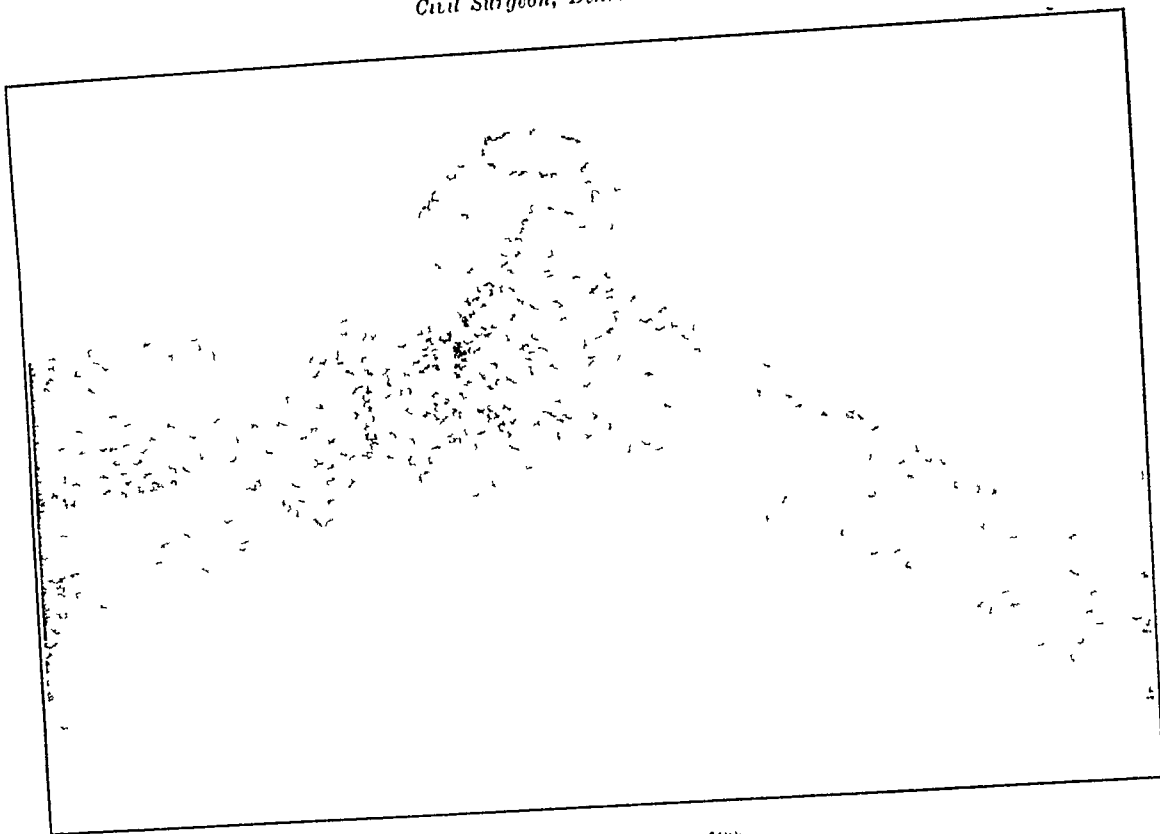
Civil Surgeon, Mymensingh

I HAVE lately been trying this drug by inunction in a large number of various diseases, and the encouraging results have made me confident of its success as a curative agent. The method is of course not new, at present I cannot remember who first drew attention to its use by inunction in malarial fever, but if I remember correctly, the dose was too small to produce any very marked

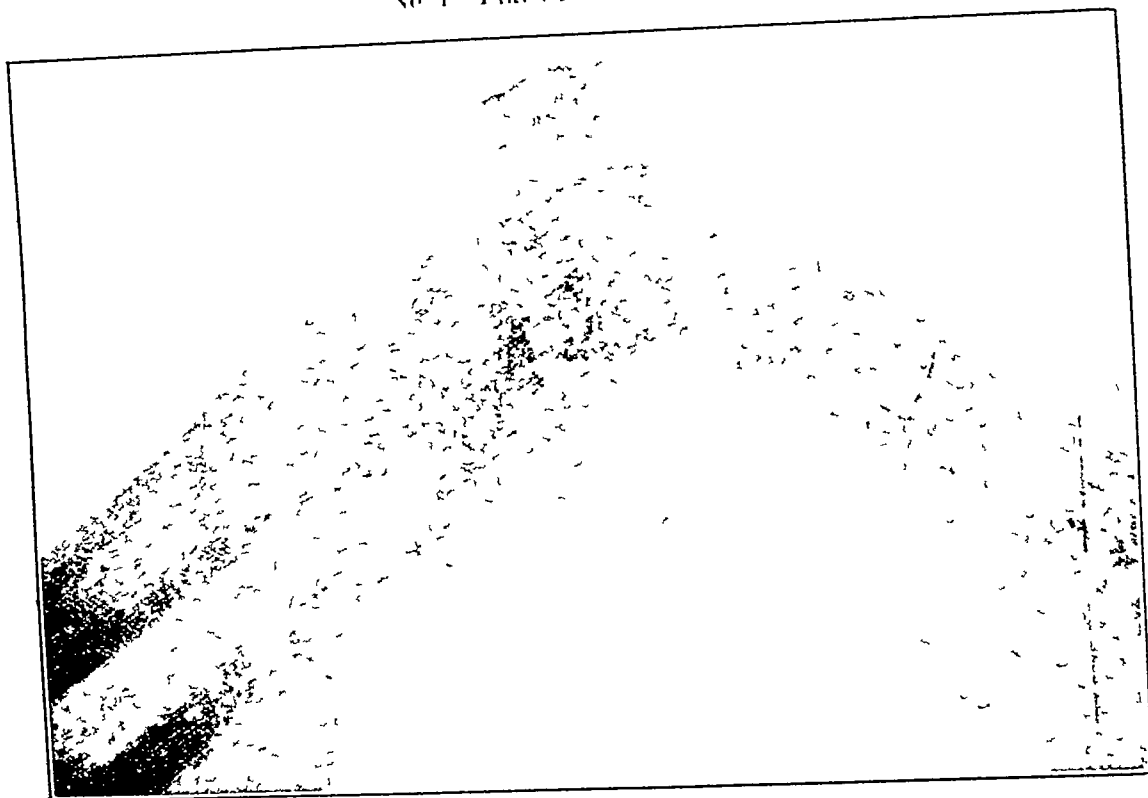
A CASE OF TRANSVERSE FRACTURE OF THE PATELLA

By MAJOR L G FISCHER, I.M.S.

Civil Surgeon, Dehra Dun



NO 1 TAKEN IN JUNE 1906



NO 2 TAKEN IN DEC 1906

result The Japanese have great faith in the drug, especially as a preventative of dysentery, and the results obtained by them in the late Russo-Japanese war, especially as a prophylactic, are deserving of attention and its adoption as such, in future wars and in the prevention of jail dysentery. The diseases that I have employed it in are phthisis, pneumonia and ordinary malarial fever. I hope in another article to give details and charts of cases so treated. The fall in temperature in all these cases and the general bodily condition were very marked. The cases of malarial fever were treated with no quinine whatever, so that there could be no doubt of the curative action. It is easy to understand the action of the drug and why it acts more potently when administered byunction. The drug is rapidly absorbed by the lymphatics, enters the blood stream and acts lethally on the bacteria and bacilli and on the toxins circulating therein much more so than where the drug is given by the mouth. In none of my cases were bad sequelæ noticed. My method of giving the drug is as follows—30 minims of the best creasote are thoroughly mixed with vaseline or olive oil. Half of this is rubbed vigorously into the axillæ in groin in the morning and half in the evening the temperature being carefully watched. One of my cases which I am now trying is a doubtful case of enteric, and the unction has already done a great deal of good. No doubt, the use of this drug can be extended to other diseases, and the trial of it and results achieved by other medical officers would be interesting and I would especially suggest its trial in cases of trypanosome infection and in the sleeping sickness.

CASE OF SARCOMA OF THE TEMPORAL FASCIA.

BY E OWEN THURSTON, F.R.C.P.
CAPT., I.M.S.

KHUAJAN Mohammedan, male, æt 43, was admitted into the Chittagong General Hospital on August 22nd, 1905, with a large tumour in the right temporal region. The growth might fairly be described as enormous, being about $1\frac{1}{2}$ times the size of a dry cocoanut, it was globular in shape with a circular base, and hung down to a certain extent over the ear and eye, and in the latter situation had dragged down the skin over the upper lid. To the inner side of the tumour below and to the outer side of the lower lid was a large knotted mass of varicose veins, and veins could be traced from it to the inner canthus. The superficial veins over the tumour were also enlarged, and in the neck, well away from the tumour running transversely from 1 to 2 inches above the clavicle, were other varicose veins.

To the touch the tumour was of firm consistence, and was freely moveable over the deeper parts. The skin over the outer surface was stretched, but otherwise not adherent. There was no pulsation

The photograph gives a very good idea of the appearance of the patient. The tumour had been



first noticed five years before admission just above the zygoma, and it had grown progressively since then. The patient was otherwise in good condition. With the obvious varicose veins, it was considered that the hæmorrhage during the removal of the tumour would most probably be very considerable, so it was decided to do a preliminary ligation of the external carotid artery. On August 26th the usual incision was made for ligaturing the artery, but when the neck was fully extended, it was found that there was a good deal of respiratory difficulty, and the external carotid could not be easily reached, so in its place the common vessel was ligatured above the omohyoid, one silk ligature was used, tied moderately tightly, and the incision sutured with horsehair.

A circular incision was then made round the tumour from 1 to $1\frac{1}{2}$ inches away from its base; despite the preliminary ligature of the carotid, there was a great deal of hæmorrhage, chiefly venous, the veins running on the surface of a well-marked firm fibrous capsule; after the tumour had been rather more than half enucleated, the enucleation was begun from behind, there was very considerable shock, and two pints of normal saline were infused into the median basilic vein; this rapidly improved the pulse, and the remainder of the tumour was quickly enucleated; it dipped deeply down behind the malar from which it was easily shelled off, and a portion of the temporal muscle was left behind. As the condition of the patient was now again not very satisfactory, a few of the vessels were ligatured and artery forceps left on the remainder; the wound dressed with

firm pressure and the patient sent back to bed

The growth was encapsuled, the capsule being firm white and fibrous with numerous large veins, on section it was yellowish white with areas of a deeper yellow colour and firm in consistence, microscopically it was a spindle-celled sarcoma, and had originated from the outer surface of the temporal fascia

Two days later the patient was put on the table, the remaining vessels ligatured and the wound sutured, but a large area of raw surface was left. There were no cerebral symptoms from the ligation of the common carotid, and the further progress of the case was uneventful, he finally absconded during the *Pujahs* with a granulating wound, having refused to have it grafted. The chief point of interest about the case is the great development of the veins which is somewhat unusual, the varicosity at the lower lid can be easily explained, but that above the clavicle is rather more difficult, the probabilities are that the blood from the scalp instead of returning by the superficial veins the whole way at first travelled along the deep muscular branches at the back of the neck and then entered the deep veins at the root of the neck opening into the subclavian, and that the extra strain thus put upon them caused their varicosity. The ligation of the carotid had apparently little or no effect upon the hæmorrhage

TWO UNUSUAL CASES OF THE PRESENCE OF ASCARIS LUMBRICOIDES

By C J ROBERTSON MILNE,

MAJOR, I M S,

Superintendent, Central Lunatic Asylum, Berhampore

It is well known that insanes are particularly liable from their habits to the presence of intestinal parasites, and in Indian asylums, where the eating of mud and filth is so very common, this is especially noticeable. A systematic examination of all the patients at present in the asylum at Berhampore is being undertaken, the results of which I hope to publish at some future date. Suffice it to say at present that at least 85 per cent of the patients are affected by some degree of helminthiasis.

The two cases I record here are of some interest, in view of the number of parasites present in the first and of their unusual location in the second.

Case I—G M, Pathan, aged 30, was admitted into the Punjab asylum in 1904. He was a dangerous homicidal maniac, and as such, could not be permitted much freedom, owing to his constantly aggressive tendencies. On February 7th, 1906, he was found to be suffering from diarrhoea and was transferred to the hospital section of the asylum. The motions, which were large, liquid, and of grass green colour were being passed four or five times daily. Castor oil was administered, followed by ordi-

nary astringents. On the evening of February 8th a round worm (*ascaris lumbricoides*) was observed in a motion. On the 9th eight more were passed in the only motion of that day. On the same evening grs v of santonine were given, which was repeated on the evening of the 10th, on which date no motion was passed. On the 11th and 12th he passed two motions on each day, containing altogether 521 *ascarides*. Vigorous santonine and oil of ricini treatment dislodged about 100 more up to the 15th, after which no further worms were passed. The worms varied in length from two to eight inches, and many minute ones doubtless escaped observation. Altogether 630 worms, weighing about four pounds, were passed. The patient did not appear to have been particularly incommoded by their presence, and his relief from their presence had not the slightest effect on his mental condition.

Case II—A Bengali female was admitted into the Berhampore asylum on July 1st, 1890. Her mental condition was one of chronic mania, which had existed for five years and which was characterized by noisy abusive garrulousness and extremely filthy habits. She was constantly irritable and always ready to assault any one who attempted to thwart her. Her mental condition persisted until her death, sixteen years later. Her physical condition was never robust, and became worse after successive attacks of diarrhoea in 1905 and 1906. On October 26th, 1906, she had a severe attack of enteritis, and came under my observation for the first time, three days later when I took over the charge of the asylum. She was then almost moribund, passing frequent watery motions and exhibiting slight jaundice. No *ascarides* were passed. Death ensued on November 5th, being due to cardiac failure.

The following is a note of the conditions found after death in the intestinal canal and liver—

The duodenum was adherent to under surface of the gall bladder. The common duct was greatly dilated and appeared as large as the duodenum. On opening this, it was found tightly packed with living *ascarides* lying together.

The gall bladder was distended and contained five living *ascarides* and one dead one and a minute quantity of fluid yellow bile. The bile ducts of the liver were also dilated, and each was found to be occupied by a living *ascaris*. The liver was irregularly bullet-shaped, much puckered on the upper surface. It weighed 32 ounces and had the appearance of a "nutmeg" liver.

Altogether the number of *ascarides* found in this patient was as follows—

Duodenum and jejunum	51
Common duct	20
Gall bladder	5
Liver	19

TETANUS PROPHYLAXIS.

A COLLECTIVE INQUIRY.

SURGEONS in India are requested to kindly fill in answers to the following list of questions as fully as they desire, and adding any special notes in their experience of the use of antitetanic serum *as a prophylactic*

Care should be taken to distinguish between experiences of the use of antitetanic serum as a part of the treatment of a case of tetanus, and its use as a prophylactic in cases of severe compound fractures and other serious injuries in which the onset of tetanus is dreaded and sought to be avoided (See Editorial Note—*I M G*, April, p 141)

Replies to these questions should be sent, as soon as convenient, to the *Editor*,

Indian Medical Gazette,

5, GOVERNMENT PLACE, CALCUTTA

A—USE AS A PROPHYLACTIC

1 Is antitetanic serum used—as a prophylactic—in your hospital (a) regularly in all cases, or (b) occasionally?

If occasionally only, what guides you in the selection of cases?

2 How is the serum administered?

(a) Hypodermically,

(b) Intradurally { brain,
spinal,

(c) Intravenously,

(d) Into the substance of the brain.

3 In what dosage is it used?

4 Is the dose repeated, and how often?

5 What kind of serum have you used?
Specify maker's name?

6 In what number of cases have you used it?

7 What antiseptic precautions do you use in treating compound fractures? How is the wound cleaned? Is this cleaning the same whether the serum is used or not?

8 With what results, as regards (1) incidence of tetanus, (2) mortality (a) when tetanus supervened, and (b) when it did not?

9 What number of compound fractures have been treated *without* antitetanic serum, (a) during the same period, (b) in previous years

And with what results (a) when tetanus supervened, (b) when it did not

B—ANTITETANIC SERUM AS A PART OF TREATMENT

Please give brief note of your experiences, and results as regards mortality and dosage, &c

Indian Medical Gazette.

APRIL, 1907

INDIAN BIRTH-RATES

OF the many subjects reviewed in his report for 1905 by the Sanitary Commissioner with the Government of India there is none of more real importance than that of the birth and death-rates of the peoples of the various provinces of India.

Lieutenant-Colonel Leslie, I.M.S., has taken up this subject specially in the report under review because somewhat reckless statements have been made to the effect that the progressive increase in the registered death-rates was a proof of the impoverishment of the mass of the peoples of India.

It will be admitted by all who know anything of vital statistics in India that those of the civil population are admittedly defective, and far too inaccurate for any sound or far reaching deductions to be drawn from them. The facts on which the elaborate figures are based are almost everywhere collected by an unpaid and generally illiterate agency, and it is only in municipal towns that registration is nominally compulsory, and Civil Surgeons who have served on Municipal Committees well know that the progress of local self-government has not yet led to a rigid enforcement even of the municipal bye-laws. Moreover, the registration of a birth is more difficult than registration of the fact of a death.

Therefore such statistics as are published monthly and yearly by the Sanitary Commissioners of the various provinces while to some extent useful for comparing the same province from year to year or the condition of different provinces in any one year, cannot be regarded as generally accurate, and the degree, moreover, of accuracy differs in the different provinces.

Take Bengal and United Provinces for example. The registered birth-rates in Bengal in 1885 was 24.7, in 1895 it was 34.5, in 1904 it was 32.4, and in 1905 it is shown as 39.5, but how very far from correct these figures are, is shown by the following which are taken from Mr Hardy's actual reviews of the census figures. Mr Hardy gives the birth-rates

as 39 in 1881, as 51 in 1891, and as 43 in 1901.

In the United Provinces the figures of the registered birth-rates in the same years are 41.2, 34.9, 46.6 and 41.2, whereas, according to the actual reviews, the figures are (in the three decennial periods of the census) 45.1, 44.2, and 44.7.

It has been ingeniously argued that the increased birth-rate is another proof of the impoverishment of the peoples of this country. Such a statement is founded on the proposition that the fecundity of a human being, as of all other animals, is in inverse proportion to the amount of nutriment available, and that an under-fed population multiplies rapidly. We are not prepared to admit such a proposition, and even if it were true, as the Sanitary Commissioner points out, the inference that the rise in the registered birth-rate is due to privation can be demonstrated to be false, unless (what no one will maintain) the high marriage-rate in India is the result of the recklessness induced by poverty rather than the result of religious and social observance.

As Lieutenant-Colonel Leslie says—"a physiological stimulus must affect the individual, and to sustain the theory that privation causes the high birth-rate in India, Indian women should be exceptionally fertile. This they are not. The average woman of India is apparently not much more fertile than the average woman of England," at this day.

Taking for India the reproductive period to be from 15 to 40 years, of every thousand women of these ages, 468 are married in England and 827 are married in India. In England in the sixties the number of legitimate births for every thousand married women of the reproductive ages was about 305, in the nineties it was 262, in 1901 it was only 235. In India taking 44 per mille of the population as given by Mr Hardy as the actual birth-rate, the number of children born for every thousand Indian women at the reproductive ages is only 273.6, or considerably less than the rate in England in the sixties.

The high Indian birth-rate, goes on the Sanitary Commissioner, then is not due to exceptional fertility, but to the large proportion of married women, and this too has a bearing on the high infantile death-rates, for a large proportion of all births must be first children of youthful parents, and such parents must needs be weak, ignorant and inexperienced.

As we have seen from Mr Hardy's figures, the average birth and death-rates* in India do not give, in his opinion, any indication of permanent change. "A high birth-rate involves either a correspondingly high death-rate or an increase so rapid as to encroach on the limits of sustenance. The high birth-rates in India are the result of a high marriage-rate, which may have been necessary if man was to contend successfully with the adverse physical conditions of his environment. When man in India has learned to protect himself against adverse physical conditions, marriage will be deferred, and the birth-rate and with it the death-rate will fall."

Current Topics.

POST GRADUATE WORK FOR MEN ON LEAVE

A CORRESPONDENT who has recently returned from long leave writes to us as follows —

Most Indian Medical Service men proceeding on furlough, intend to spend the winter months of their leave in post-graduate study, and have probably already determined to what particular branch or speciality they wish to devote their attention. Now in London—and these remarks refer solely to London—there are several hospitals whose teaching is entirely devoted to post-graduates, and very many hospitals for all the specialities. At all the post-graduate schools, fees of varying amounts have to be paid. Attendance at the various special hospitals is, in some cases free, in others fees are charged. I do not wish in any way to particularize for obvious reasons, but it is a fact that there are marked variations of excellence in the teaching, at the various post-graduate institutions, and further, more may be seen and learned at some special hospitals where attendance is free, than in others where such instruction has to be paid for. In these days of depreciated rupees and disappearing private practice, every man wishes to get full value for any tuition fees he may pay, and time he may devote to post-graduate study whilst at home. To assist him in doing so is the purpose of these few remarks. There is one post-graduate institution at least, where full measure of learning is obtained for the modest annual subscription charged. I refer to the "Polyclinic" situated in Chancery Street, off Tottenham Court Road. The Secretary of that institution is Captain Hayward Pinch, FRCS, IMS (retired), a most able, energetic and courteous officer who rendered the writer great assistance during his furlough, for which most sincere thanks are

gratefully tendered. From his position at the "Polyclinic" Captain Pinch is in thorough touch with all the medical and surgical teaching, etc., going on in London. He takes a great interest in our service, in which unfortunately ill-health cut short a most promising career and he has kindly authorized me to state that should any Indian Medical Service men take the trouble to call upon him, he will be only too pleased to freely render them all the assistance he can, as to the best disposal of their time, on learning from them what particular course of study they wish to take up. The advice then given to officers going to London is to join the Polyclinic at once and avail themselves of the kind offer mentioned above.

PROPHYLACTIC INJECTION OF ANTITETANIC SERUM IN COMPOUND FRACTURES

THIS subject came up at a discussion in the Medical Section of the Asiatic Society of Bengal apropos of a paper by Major D M Mon, IMS, on two cases of tetanus treated by him by injection of the serum into the spinal canal after "lumbar puncture." It was then suggested by Major F P Maynard, FRCS, IMS that the time had come to try and ascertain the value of such prophylactic injections by a collection of the results in cases of compound fractures treated with and without them in the large hospitals of India.

Tetanus, it is well known, is especially common in all tropical and subtropical countries. It is very common in Calcutta and we believe in other large cities in India. As is well known, prophylactic injections are vigorously carried out in some hospitals and especially in the Medical College, Calcutta, and never or rarely used in others. It is a method of prophylaxis which it is difficult to prove the value of. It is only by the observation of a large series of cases injected, controlled by a similar series in the same place and during the same period not injected, that any figures of value can be obtained.

It is evident that if this method of prophylaxis is of real value, the cost should not be allowed to stand in the way of its use. On the other hand, if the value is imaginary, it is useless to go on spending large sums of money upon it, with the possible neglect of that rigid sterilization of the wound, which is really a perfect form of prophylaxis.

Some wonderful figures on this subject have been published in the *Journal American Med Assoc.* (August 18th, 1906). The accidents, great and trivial, had followed the celebrations of the 4th of July. It is shown that there were from 4,000 to 5,000 injuries reported on this day in each year, and with equal opportunities for tetanus infection, the tetanus cases which numbered 415 in the year 1903, dropped in 1904 to 105, and in 1906 to only 89. The

*Mr Hardy gives the death rates for three provinces as follows —

	MADRAS	BENGAL	U PROVS
1881	44.5	39.9	41.9
1891	38.0	44.8	37.7
1901	38.1	38.9	43.4

J A M A remarks as follows — "We have the best grounds for believing that this great decrease in tetanus is chiefly due to improved care of dangerous blank cartridge wounds. Proper cleaning and draining have prevented many cases of tetanus, the prophylactic use of antitoxin, the only certain safeguard, has prevented many more."

We direct attention to the list of questions published as an insert with this number of the Gazette. We hope that Surgeons in all parts of India will reply to these questions, as fully as they can. The replies will then be collected, and a synopsis of them published in a later issue. We hope that the consensus of opinion thus brought together will go far to settle this important surgical question.

THE CIVIL HOSPITAL, SECUNDERABAD

THE triennial report of the Civil Hospital, Secunderabad, 1904-06, has been submitted by Lt.-Col C M Thompson M.B., B.Ch., the Medical Officer in Charge.

The report is an excellent record of good work and one which few hospitals except in the large presidency towns, could rival.

During the past year a new X-ray room has been added, and the operation room vastly improved and made thoroughly up-to-date. There is a yearly attendance of over 1,600 indoor patients, and over 43,000 outdoor patients, and it is satisfactory to see the increase is steadily progressive, an indication of the popularity and efficiency of the institution. During the past year there was a bad outbreak of cholera in Secunderabad, and 36 patients died in the hospital from this disease.

The figures for the past years show a steady increase, and, as might be expected, malarial fevers and affections of the digestive system head the list. We note a marked increase of cases returned as enteric fever, viz, none in 1904, eleven in 1905, and twenty-seven in 1906, this points to a personal factor in diagnosis, we suspect, rather than to any sudden increase in the prevalence of the disease. Lt.-Col Thompson comments briefly on the undoubted prevalence of enteric fever in all classes of natives in the Secunderabad bazaar.

The surgical record is a good one, viz, 178 major operations, including 12 cataracts, 8 laparotomies (six of these for appendicitis), 10 for liver abscess, two caesarian sections, 10 for hydrocele, 7 amputations, and 16 tumour removals.

The Lady Curzon Maternity Ward has proved a genuine success, Europeans, Eurasians and Natives of India are resorting to it in increasing numbers. The following remark is of interest —

"There were no deaths amongst the women who came to hospital immediately on the commencement of labor

pains, or who had been admitted to hospital for some days before labor began. Many deaths are undoubtedly due to the ignorance of Native *dhairs*, who cannot be prevailed upon to bring their patients to hospital in time, and who are so ignorant that they are unable to recognise the signs and symptoms of danger. If some of the Native *dhairs* who are now being educated in the Afzul Gunj Maternity in Hyderabad, could be prevailed on to settle in Secunderabad, it would confer a great boon on the poor women of this town."

More subscriptions are urgently needed, and especially from the wealthy Hindu gentlemen of the neighbourhood. Within the past year a Training School for Nurses has been established, which is proving useful. The nursing staff now consists of a Lady Superintendent, a matron and ten nurses and probationers.

The report shows that an admirable amount of good work is being done, and Lieutenant-Colonel Thompson is to be congratulated on the many improvements effected during the time the hospital has been in his charge and on its efficiency.

THE CALCUTTA MEDICAL COLLEGE IN THE SIXTIES

At a meeting of the Calcutta Club in November last Dr. Bully Chunder Sen gave an interesting account of life and work in the Calcutta Medical College in the sixties. Dr. Sen entered the college in June 1858. At that time it was the custom for one of the professors to deliver an introductory lecture, and in 1858 it was delivered by Dr. T. Thomson, the Professor of Botany, who is quaintly described as a man simple as a child, and learned as a parent. Physiology was taught by Dr. Crozier. Materia Medica came in the second year's course and was taught by Dr. Eatwell, the Principal of the College, he used to say that "quinine, calomel and opium are the three legs of the tripod on which materia medica stands."

The professors in that day were as follows —

Dr. E. Goodeve	1st Physician
Dr. S. C. G. Chuckerabutty	} 2nd Physicians
Dr. N. Chatterjee	
Dr. J. Farrer (now Sir)	1st Surgeon
Dr. S. B. Patridge	2nd Surgeon
Dr. C. Archer	Ophthalmic Surgeon
Dr. Wilson	Obstetric Physician

"Dr. Goodeve was a man of vast erudition and a very painstaking teacher. The examination of stools in dysentery was first introduced by him."

Dr. S. C. Chuckerabutty is thus described —

"Dr. Soorjoo Coomar Goodeve Chuckerabutty, a native of East Bengal, was one of the fortunate young men, selected to proceed to England for medical education under the care of Dr. H. H. Goodeve. There he obtained prizes and medals and the degree of M.D. of the London University, a degree hard to obtain then and even now. When the Covenant Medical Service was opened to the Indians, he went again to England and succeeded for the first time in getting into that coveted service. He acted as House Physician for many years, and after officiating several times as Professor of Materia Medica, was at last made *pucca* in that post."

when Dr N Chevers stepped into the chair of Medicine. He was a very clever physician, especially in diseases of the chest."

The following reminiscences of the veteran Sir Joseph Fayet and of Drs Partridge and Norman Chevers are of interest —

"Dr Fayet, now Sir Joseph, was the 1st Surgeon and Professor of Surgery. He was a short, well built man, rough, ready and of impulsive nature. His first direction to his dressers was 'I want implicit, unyielding, unreasonable obedience, if I tell you to stand on your head, you must do so before you consider' and every now and then he used to thunder 'Either I shall leave the College or I shall make you leave the College'. All these sayings of his made all his dressers nervous in the discharge of their duties in the Hospital, and many a student including my humble self, suffered from his impulsiveness, he was not only so to the students but even to the other Professors and Principal of the College.

Dr S B Partridge, the 2nd Surgeon, was a man of short stature and amiable disposition. He was a neat and clean operator, so much so that you could take a photo of his operations for a block. He had an uncommon memory though he used to complain of the want of it. On opening Quain's Anatomy, we used to find that his lectures were Quain reproduced verbatim."

"Dr Norman Chevers, a man tall, stout and of commanding appearance, was a very learned man a facile writer and a fluent speaker. His works on Medical Jurisprudence, Diseases of the Heart and Indian diseases bear ample testimony to his great abilities. His analytical and synthetical powers, I came to appreciate when I read in the *Indian Medical Gazette* his review on the Report of Dr Barker on the fevers of Serampore."

Dr Charles Archer, the Ophthalmic Surgeon, is described as 'an uncommonly great man, great in learning and greater in his love and sympathy with his pupils.'

Dr Wilson was the Professor of Midwifery. "His lectures were scarcely audible, but he was a good accoucheur."

The subject of Dentistry was at this period added to the curriculum, but "its examination was not compulsory, and no one paid any heed to the lectures." Dr Smith was the first Professor of Dentistry.

VACCINATION AGAINST SYPHILIS

We quote the following synopsis from *Journal A M A* of an article in *Annales de l'Institut Pasteur*, (Paris, p 1599)

"Metchnikoff and Roux announce that they have succeeded in establishing the attenuation of human syphilitic virus by passage through small monkeys, opening a prospect for successful vaccination against syphilis. They further reiterate their former announcements in regard to the efficacy of a 25 or 33 per cent calomellanolin salve as a means of antisymphilitic prophylaxis. The student, Maisonneuve, inoculated with human virus and then treated with this salve, has been absolutely free from any sign of syphilis for nearly a year to date. (This experience was described in *The Journal* for June 9, 1906, page 1779). Another experience on man is reported in this present communication, which proves the attenuation of the virus by passage through monkeys. About a year ago one of the assistants in the research, free from the slightest

syphilitic taint accustomed to examine the inoculated monkeys every day, noticed a small ulceration on his lower lip. He feared accidental contagion from the inoculated monkeys, but physicians consulted could find no evidence of syphilis in the ulceration. To ease his mind, monkeys were inoculated with scrapings from the lesion. In due time the monkeys developed typical syphilitic lesions at the point of inoculation, with numbers of the spirochetes. The assistant has been kept under the closest supervision by Fournier but nothing has been observed to justify antisymphilitic treatment, no enlargement of the glands nor other sign of syphilis, and yet his lesion transmitted syphilis to small monkeys. Inoculation of anthropoid apes was constantly negative. This is accepted as evidence that the passage of human virus through the lower monkeys attenuates its virulence so that it fails to produce the typical syndrome when injected into man or the higher monkeys inducing merely a reaction similar to that of cowpox in relation to smallpox. This assumption has been confirmed by numerous experiences with monkeys. It has been found possible to keep the monkeys free from tuberculosis and in good health by excluding tuberculous monkeys and attendants and boiling the milk. The prospects seem promising that it will be possible to produce by several passages through the smaller monkeys, especially the *Macacus rhesus*, a vaccine which will prove as effectual for man as it has proved for anthropoid apes, and probably also in the case of the assistant mentioned above. He refuses to submit to the final test as to his being vaccinated, that is, to allow himself to be inoculated now with virulent human material as a test of his immunization. Another person, a man of 79, free from syphilis, allowed himself to be inoculated with virus from a human chancre, after five passages through the monkey organism. Two minute papules developed in the man at the points of inoculation, but soon subsided, and during the year since there have been no further signs of syphilitic infection."

THE tremendous mortality due to the outbreak of malarial fevers, following on the abnormally heavy rainfall in the Punjab in the months of September, October and November, 1906, is well seen in the following figures —

In September the total number of deaths attributed to "fevers" is shown as 28,569, in October this total had risen to 50,742, and in November it reached the enormous figure of 64,315. The figures in the previous year which was an ordinary year, *qua* malarial fever, were only 28,583 and 32,721, that is, the November total deaths from fever doubled those of the same month in the previous year. The disease was virulent in all the districts except in Jhang, Lyallpur, and Simla.

WRITING in the *Journal A M A* (January 12th, p 133), Dr J H Ford, Captain, and Assistant Surgeon, U S Army, on the antitoxin treatment of tertian malarial infections, concluded from his experiments as follows —

"From the cases here recorded it would appear that the successive inoculations of monkeys or goats with blood containing the *Plasmodium vivax* gives rise in those animals to an antitoxin which, when injected in adequate dosage into human beings, may be followed by disappearance of the parasites from the circulation and

disappearance of the symptoms of malaria. This agent has no apparent influence on infections caused by a variety of the malarial parasite other than that from which it was developed."

THE following extract forcibly illustrates the difficulties of a sanitarian in the Isthmus of Panama —

"It so happened, a year or so later, that Dr Reed was asked by the Government to go to the Isthmus on some business not connected with sanitation. On his return he made his formal report, and was about to take his departure, when he was asked, as a matter of courtesy, to make a statement of conditions in general, particularly in relation to sanitation, as he had observed it in progress. He complied with the request and told in very plain language just what he had seen. Names, dates, and places, with detailed circumstances, were given with a freedom and precision foreign to the circumlocution methods usually employed in government reports. He gave instances showing how the sanitary administration was being hampered by superior officers, who turned down requisitions for necessary supplies, how important policies formulated by Dr Gorgas were being embarrassed by the bumptious meddlesomeness of the same superiors, how the work in detail was encumbered by a marvelous complexity of red tape. He suggested remedies for each condition, and showed how the commission had been responsible for many blunders. Then he proceeded to quote the President's own language and to call on him to keep his word by demanding the resignations of the commissioners. Then, proceeding on the theory that his statement was not an official report, and, having the courage to stand for what he said, Dr Reed gave it to the country.

The revelation startled everybody, but probably nobody more than President Roosevelt himself, who proceeded to reprimand Dr Reed for having taken the public, as well as the administration, into his confidence. The publication was denounced as an 'impropriety' and the report itself as being 'controversial'.

No sooner was the reprimand issued, however, than President Roosevelt demanded the resignation of the commissioners. Colonel Gorgas was given a free hand in ordering supplies, transportation was accelerated, supervision by bumptious 'superiors,' who were ignorant of sanitary problems, was interdicted, and the red tape was cut away with delightful celerity—in short, everything that Dr Reed had recommended was promptly granted, even to details. Now, after two years, it seems that the last point in the 'controversy' has been conceded by the appointment of Dr Gorgas as a member of the commission."

WE direct attention to the article in this issue on the History of the Indian Medical Service from the pen of Lieut.-Colonel D G Crawford, IMS, who has so often enriched our columns with articles on the history of the service. We think that our readers in all parts of India will welcome this the first instalment of this sketch and agree with us in thinking it was too good to be destroyed. We hope that when leisure permits, Lieut.-Colonel Crawford will be able to produce his History of the Indian Medical Service, of which we gave an outline in March last (p 101). Meantime we believe that the sketch, which we hope to publish in instalments during the next few months, will be much appreciated by our readers in the service.

NOTICE, PRIZE RS 100

THE attention of Assistant-Surgeons and of Civil Hospital Assistants (who are subscribers to the *Indian Medical Gazette*) is directed to the offer kindly made by the proprietors, Messrs. Thacker Spink & Co, Calcutta, of a prize, value Rs 100 (one hundred) for the best and most practical essay by an Assistant-Surgeon or C H Assistant

ON

THE BEST METHOD OF PROPHYLAXIS AGAINST PLAGUE IN INDIA

The essay to be clearly written on one side of the paper only, and sent in to the Editor, *I M G*, 5, Government Place, Calcutta, on or before 1st June 1907. The decision of the Editor as to the prize to be final. The prize essay, or other selected essays, will be published in this Gazette if deemed of sufficient merit.

Reviews

Cancer of the Breast and its Operative Treatment.—By W SAMPSON HANDLEY, Hunterian Professor of Surgery and Pathology in the Royal College of Surgeons of England, Assistant-Surgeon to the Middlesex Hospital, &c, &c. Pp vii + 232. With 9 plates and 53 figures. London: John Murray, 1906. Price 12s 6d net.

THE author's aim as stated in the preface, has been to place the operative treatment of cancer of the breast upon a more completely rational basis. The work embodies the results of his investigations in the Cancer Research Laboratories of the Middlesex Hospital. In the opening chapter the inadequacy of the embolic theory of the dissemination of cancer is discussed, and the next chapter proceeds to give a clinical and microscopical study of parietal dissemination. Chapter 3 deals with the routes of lymphatic dissemination in the parietes, and following on this is a chapter devoted to a microscopical study of the centrifugal spread of permeation in the parietal tissues. In this chapter the author gives the results of his investigations in five cases, in sections taken from strips of the parietal tissues radiating from the edge of the primary growth, from which he comes to the general conclusion that "cancer spreads in the parietal tissues by permeating the lymphatic system like an invisible annular ringworm." The next section deals with visceral dissemination, which question is very fully studied and set forth in three chapters. The remainder of the book deals with the pathology of cancerous pachyderma, natural processes of repair in carcinoma, the anatomy of the breast and axillary glands, and the history and results of operative methods for breast cancer, concluding with two chapters on the principles of the operation for breast cancer and a method for the operative extirpation of the same. The principle of this latter is that the centre of the growth

must be taken throughout as the central point of the operation area. The removal of the breast is merely a necessary incident and not the sole object of the operation. Special stress is laid on removal of the deep fascia over a large area, and also of both pectoral muscles in their entirety, save in exceptional cases. At the end of the book is a short appendix dealing with lymphatic permeation as a factor in the dissemination of Melanotic Sarcoma, with a note on operative treatment of the same. We have nothing but praise for this book. It is well and interestingly written and covers a large field of original and valuable research. It would seem to place the operative treatment of breast cancer on a much more scientific basis, and would lead one to hope for better and more lasting results in the treatment of this most prevalent disease. It is a work which ought to be carefully studied by every Surgeon who is likely to have to operate on this class of case.

The printing and illustrations are excellent, and the execution of the plates leaves nothing to be desired.

At the moderate price at which this book is placed on the market, we should venture to predict that it will meet with a very large and ready sale.

Syllabus of Lectures on Human Embryology an introduction to the study of Obstetrics and Gynæcology for Medical Students and Practitioners; with a Glossary of Embryological Terms. By WALTER PORTER MANTON, M.D., Professor of Clinical Gynæcology, Detroit College of Medicine. Third Edition. Revised and Enlarged. Illustrated with a colored frontispiece and numerous outline drawings. 12mo, 136 pages. Price, \$1.25 net. F. A. Davis Company, 1914-16, Cherry Street, Philadelphia, Pa.

THIS little work is written in the form of short and concise notes embracing only the outlines of the main important facts of the subject. It is interleaved with blank pages to enable the student to supplement the printed matter either with notes from his lectures, or from larger works. It contains an excellent section dealing with practical laboratory work on the subject, with directions as to the preparation of specimens, hardening, cutting and staining, etc., concluding with a useful glossary of many of the words and terms used in embryology. The book will, we think, be found useful both by students when first starting the subject, enabling them to pick out the most important points, and also by the practitioner as a book of rapid reference for any of the main facts of embryology. The printing, binding, etc., of the book are good, and the illustrations, though somewhat crude, serve to bring out the special points they are meant to demonstrate.

Aids to Dental Surgery. By A. S. UNDERWOOD AND D. GABELL. London: Baillière, Tindall & Cox, 1907.

THIS is the second edition of this very useful volume in the Students' Aid Series. It has been

considerably altered from the first edition, and the two new chapters added on the bacteriology and hygiene of the mouth are well worth reading. In this little book is condensed in a concise form a large amount of useful information on dental surgery. The book does not treat of operative work, but of malformations, inflammations, caries, injury, extraction, etc. On the whole the book is well worth reading, and few medical practitioners would not be the better for a perusal of this concise and useful little book. Its price is only 2s. 6d.

Aids to Medical Diagnosis. By A. WHITING, M.D. London: Baillière, Tindall & Cox, 1907. Fcap 8vo, pp. 152, Illustrations, 8. Price, 2s. 6d., cloth.

THERE is a wonderful amount of information contained in this little book of 152 pages. It is intended for those who already have a knowledge of systematic medicine. The plan adopted is to follow the out-patient routine and start with leading symptoms, and after arranging the diseases presenting these symptoms, in groups, to ultimately differentiate them as clinical entities.

The little book is well arranged and treats of a considerable variety of subjects, blood, brain, digestive system, lungs, joints, urinary, and nervous system.

To the student who has a good knowledge of his Practice of Medicine, such a little book is to be recommended. We are certainly of opinion that the author's intention has been well carried out and he has produced a book which is not a cram-book, but is distinctly useful to students.

Cholera. Its Prevention and Homœopathic Therapeutics. By SARAT CHUNDRA GHOSE, M.D., Calcutta, The Hahnemann Home.

THE preface of this little book is dated February 1905, but it only reached our table in February 1907.

The author, Dr. S. C. Ghose, is the author of several similar volumes on the homœopathic treatment of various diseases.

The book is supposed to treat of the prevention as well as the treatment of cholera, but like Falstaff's tavern bill, it contains an intolerable deal of treatment and a mere harp on prevention. The two and-a-half small pages devoted to prevention compared with 196 pages of homœopathic treatment is possibly characteristic of the attitude of that school of medicine to modern hygiene, but even in prevention the homœopathic mind finds certain drugs useful as a prophylactic, and copper is strongly recommended. We are simply at a loss to understand how any one can believe in the extraordinary list of drugs recommended in this book for every possible symptom of cholera—on page 76 is given in epitome of treatment, and we find one drug only, camphor, for the preliminary diarrhoea, for the invasion stage no less than 16 drugs, for the "fully developed stage" five more, for collapse ten drugs, for the typhoid state twelve more, for

hiccough no less than twenty drugs, for uræmia, strange to say, only four, and so on

It is difficult to treat seriously such a work, and unless the drugs are given in such infinitesimal doses as to be practically useless and harmless, we cannot understand how any unfortunate patient can ever survive this excessive example of meddling polypharmacy. Faith is a wonderful thing, but the faith which can believe all that is written in this book passes our understanding

Medical Society

ASIATIC SOCIETY OF BENGAL, MEDICAL SECTION

THE usual monthly meeting took place in the Asiatic Society's rooms on Wednesday, 13th February. Capt E Holdich Leicester, I.M.S., F.R.C.S., B.S., read a paper on some cases of **Appendicitis**, which led to a lively discussion as to the best time for operating. Capt Leicester was for operation as soon as diagnosis was made, and pointed out in the early operation the results are very good and that delay was often fatal. Lt-Col Harris, as a Physician, was opposed to early operation in every case, and referred to many cases where the attack yielded to purely medical remedies and did not recur. Major D M Mon was for operation in the quiescent period after the acute first symptoms had passed away, and pointed out the danger of operation during the acute attack, and the comparative safety of operation when adhesions had formed and nature itself had limited the area of trouble. It was remarkable that all present considered the disease quite a common one in Natives and Europeans alike.

Major Mon then read a note on a new method of using the **antitetanic serum**. Tetanus, it was well known, was an extremely common complaint in Calcutta. Major Mon had, like many other surgeons, been disappointed with the antitetanic serum used subcutaneously, and in two severe cases of tetanus recently he had resorted to **lumbar puncture**, had withdrawn several cc of cerebro-spinal fluid and had injected repeated doses of antitetanic serum into the spinal cavity. He remarked on the occurrence of good sleep after each injection, a point also noticed after the use of other serums.

In the discussion which followed, Lt-Col Harold Brown referred to the success which had followed in his hands the injection of the serum direct into the substance of the brain. Lt-Col Harris remarked on the fact that there is a great difference in the seriousness of tetanus attacks and that in many there was a distinct tendency towards recovery, he specially referred to some seven or eight recent cases in his wards at the College Hospital, which had recovered without

any other treatment than chloral and bromide to control the spasms, and Capt Megaw agreed with Col Harris and stated that these seven cases were certainly of a severe type, and by no means mild ones. Major Maynard then raised a most important point on which more light is needed. He referred to the difference in practice which exist in the different hospitals in Calcutta as to the **prophylactic use of antitetanic serum** in compound fractures and other such cases. This prophylactic method is admittedly expensive, and its routine use is a strain on hospital finances, therefore it is most desirable that it should be settled. If the use of this prophylactic is proved beyond reasonable doubt to be effective, then it must be used in all cases. It is very desirable therefore that some one should undertake a collective investigation as to the value of thus using the antitetanic serum, this could be done without difficulty in Calcutta as the practice differs in many of the large hospitals in that city. After this the discussion on Lt-Col Brown's paper on **Cerebro-spinal fever** was resumed, having been postponed from last meeting.

Major W J Buchanan, I.M.S., congratulated Col Brown on his admirable paper (see *Indian Medical Gazette*, March, p 81). He remarked on the identity of the mode of attack and on the symptoms with the cases he had observed when in charge of the Central Jail at Bhagalpur. There had been now 102 cases in the past six years in this Jail, they had been irregular in their occurrence, and except in one case no possible connection could be traced between one and the other. The only explanation hitherto attempted had been the Bhagalpur **Dust Theory**, which was first suggested by Major C R Stevens, F.R.C.S., and which had been supported and elaborated in successive outbreaks by Buchanan, Newman and Woolley, who were successively in charge of the big Jail at Bhagalpur.

Major Buchanan also referred to the common text-book platitudes about the occurrence of the disease under bad "hygienic conditions." This was emphatically not the case in the fine new barracks at Bhagalpur, and Col Brown, Major Mon and Lt-Col Harris, who all have had charge of the Cooly Emigration Depôts at Garden Reach, Calcutta, were all emphatic as to the good hygienic surroundings of these coolies while in the depôts, and in this point also the experience of the Emigration Depôts and the Jails entirely agreed.

Major Buchanan remarked on the fact that the disease was specially liable to attack bodies of men collected in barracks, prisons, regimental lines or emigration depôts, though such places are always in a higher state of sanitation than the homes of the people immediately surrounding. Lt-Col Harris commented on the rarity of cerebro-spinal fever among the general population, he had not, he said, seen more than one case a

year during his stay in Calcutta, though he had seen many at the Emigration Depôts

Notes of Travel.

A VISIT TO THE AUGUSTANA HOSPITAL, CHICAGO, U S A *

(Continued from page 114)

THE operation room at the Augustana Hospital was, as at most of the hospitals visited, not particularly different from the operating rooms we are accustomed to see in all good hospitals in Europe, and even in India. The following points, therefore, are applicable in a general way to all seen. One noticed rather a tendency to use a special, rather dull, glazed small tile for the floors instead of marble. It, however, was laid better than probably would be attainable in India, and hence the objection of numerous joining could not, as seen in America, be alleged against it, as would be the case in India. I did not notice either that these tiles were liable to fracture, no doubt owing to their incorporation with the bed of cement they were laid on. The walls are usually of marble, very fine large slabs being often used, but a critic could, in most of the operation rooms I saw, find many grounds for finding fault in the construction, as regards ledges left for windows, etc., though it is universal to have the main corners rounded off. The operation tables and aseptic furniture are also much the same as in ordinary use everywhere else. The operation tables have the usual mechanical appliances for raising and lowering, giving the Trendelenburg and other inclined positions. These appliances usually were fairly simple. The furniture was, as a rule, not quite of the expensive type we are accustomed to wish for in India, having usually white enamelled metal and not glass tops. Both operating and instrument and dressing tables are covered for each separate operation with sterilized sheets or towels, and little is seen of antiseptic lotions. Instruments usually are laid out on a sterilized cloth direct from the basket of the sterilizer, but in some cases are left in this basket and taken out of it when required individually. The hand sterilizing and washing during the course of an operation is usually performed in a washing trough under hot and cold water taps, which are operated either by pedal arrangements or in some cases by long arms, which are pushed backwards and forwards by the elbow of the operator.

The patients are much more enveloped in sterilized special clothing, and the seat of operation set apart by large sterilized cloths pinned on with safety pins, than one has been accustomed to see, the material used being generally a loosely woven cloth, which in American text books is called butter cloth. Most of the later American text books have ample illustrations of this preparation of the patient. One also noticed in most cases there was a contrivance for isolating the head of the patient and the anesthetist from the seat of operation. At Rochester this was done by an arm of copper wire attached to the side of the operation table, and passing across the table below the head of the patient about 18 inches above the table, to this a sterilized cloth, to form a curtain, was attached. It was universal to see the operator and his assistants don freshly sterilized complete overalls of white linen, but there were differences in practice in the use of head coverings, masks, and sterilized foot coverings, as also in the use of india rubber gloves, in the most complete system all these were used, but this was seen in only one case, special shoes being used only once. At Rochester, india rubber gloves, with gauze head coverings and

respirators were used, whilst Dr Ochsner used no head covering, and gloves only for septic cases, his assistants, however, used gloves throughout. Visitors are generally allowed, if of special importance, to come within the arena, but have to assume sterilized overalls completely enveloping them. More standing round the table was permitted than would have been expected. At Rochester, three or four were thus allowed within the barriers, the remainder, generally some 40 or 50 in number, took seats immediately outside the barrier, and took off their coats before entering the room. In no case were there any elaborate special arrangements to prevent contagion from students or visitors on the benches, in fact, the opinion was expressed that this was a source of danger little to be feared.

The following few points of detail in technique as used at the Augustana Hospital are taken from a paper on Aseptic Surgical Technique by Dr Ochsner *

Disinfection of the Patient—He is given a warm soap and water bath on the day before operation, and immediately before this a large dose of castor oil. On the morning of operation, in suitable cases, a large warm water enema is given, in cases of operation on the rectum this is given on the evening before.

On the evening before the operation the skin over the seat of operation is thoroughly scrubbed with green soap and warm water, then scrubbed with strong alcohol, then a moist dressing of gauze, saturated with a 3 per cent carbolic acid solution, is placed over the field of operation, covered with absorbent cotton and bandaged on. Before the operation is commenced the seat of operation is scrubbed over again with strong alcohol. It is stated that it is equally efficient to disinfect the skin immediately before the operation, but it is not done to save time.

Disinfection of the Hands of Operator and Assistants—Chief dependence on thorough washing in warm water with green soap, scrubbing with a brush, and the use of sterilized gauze to rub off loose epithelium. Great care is habitually taken never to touch septic cases with an uncovered hand. In addition the hands are soaked for a few moments in 1—2000 corrosive sublimate solution, and then in strong commercial alcohol.

Disinfection of Instruments—All instruments, except knives, are boiled in soda solution both before and after operations. Knives are washed carefully with water and sterilized with alcohol. Silk, silkworm gut, horse hair, drainage tubes, etc., are likewise boiled for one hour and preserved in 1 in 20 carbolic or strong alcohol. Dressings, aprons, sheets, towels, etc., are disinfected in steam sterilizer for two hours. Everything coming in contact directly with wounds, as basin instruments, pans, jars for dressings, are boiled in soda and water for one hour and wrapped up in sterilized sheets until used.

Pads of absorbent wool and of gauze sterilized as above are used as sponges. I saw no actual marine sponges in use anywhere. In Rochester there were some very satisfactory artificial sponges of wool and thick gauze, with tails to them, so that an end could always remain outside the abdomen, and thus there be no fear of leaving a sponge behind, avoiding the troublesome process of counting. I also observed no trouble about leaving instruments behind, all hæmostatic forceps used in this class of case having very long handles, which thus were never left or concealed inside the abdomen.

Catgut I observed everywhere used very extensively. Inside the abdomen it was used for all ligatures of vessels and pedicles and for suture material, except in operations of anastomosis of intestines, where either Pagenstecher's linen thread or silk was used. Catgut was generally used for the peritoneal and other buried sutures in the abdominal wall, continuous sutures being

* By Major A. H. Nott, M.B., F.R.S.

* Aseptic Surgical Technique minimum requirements for aseptic surgical operation in a hospital in which the personnel of the operating room is permanent, June 14th, 1904. Albert J. Ochsner, of Chicago, Illinois.

used. In a varying way, silk-worm gut, silk or horsehair I saw used for the skin incisions, most commonly, I think, continuous silk. Catgut was sterilized, as a rule, with some impregnation of iodine, usually by processes taking many months. The process used at the Augustana Hospital was immersion in sulphuric ether for one month, then in strong commercial alcohol, in which one grain to the ounce of corrosive sublimate had been dissolved, for another month, the solution being renewed once during this month. It was preserved indefinitely in a solution of one part of sterilized iodoform, five parts of ether and fourteen parts of alcohol. It was claimed that this, according to its size, held for seven to ten days in the tissues. Chromicized catgut is used where a longer duration than this is required, as in hernia.

The impression I formed was that catgut was looked upon as an important source of danger, but that its practical advantages for all kinds of buried sutures made its use essential. Samples of each manufacture should be tested always by cultivation.

Drainage.—Drainage I saw to be used much more extensively than I had expected, certainly to the extent which most of us in India use it, whilst at the same time making excuses for doing so, not feeling sufficient confidence in our system to trust it without drainage. Amputations of large limbs, removals of breast with the pectoral muscles, are freely drained in several places for from two to four days. Ordinary india rubber drainage tubes are used a good deal in the Augustana Hospital. Elsewhere I saw gauze drains, or the so-called cigarette drains (gauze surrounded by doubled gutta serena tissue, which avoids the difficulty of gauze becoming adherent to the tissues) most frequently used. Once or twice only in abdominal cases did I see glass drainage tubes used, then iodoform gauze twigs were pushed down into the tube. In appendicitis cases particularly drainage was done more than I expected to see. In a few cases where the active inflammation around the appendix appeared to be of a very innocent character, a small cigarette drain was inserted. These drains are often kept in their place by suturing them to the tissues with silk or catgut.

As has been said, irrigation of wounds or of the abdominal cavity is practically never used. I saw no irrigators after the fashion we think necessary in new operation rooms in India in any of the operation rooms in America. Curettement of the uterus was done without irrigation actually in the operation room, dry applications only being used.

Dr Ochsner believes that the only really serious risks are those of contact infection of the wounds, and that the actual weak spot is usually that the hands of the operator or assistants become fouled after the commencement of the operation.

On Wednesday, September 12th, I journeyed to the Mercy Hospital, of which I understood Dr. Murphy was the surgeon in chief, and in which he operated on practically all his private patients. It is a fine building in a quiet, middle class neighbourhood, near the Indiana Avenue, being about half an hour by tramway from central Chicago. It is managed by a Roman Catholic sisterhood. The operating room is a very large one, giving sitting accommodation for one hundred or more visitors, each seat separate and flapping up. There is a thick marble low wall to separate arena from seats, no visitors being allowed within arena. Walls of marble, but some ledges observable, furniture, tables, etc., covered with sterilized cloths and details much the same as described at the other clinics. Lighting seemed to be rather unsatisfactory, that is, the operations could not well be seen by the spectators if the natural light was made use of. A well conceived electric light, however, was used, which followed the head of the operator round, being blackened on the aspect which would shine on his eyes. The usual dull white small octagonal tiles, well set, formed the floor. India rubber gloves and gauze helmets and respirators were used, but no special shoes. Anæsthetist was concealed behind a

sheet covering patient's head, which made him look much like a photographer taking a photograph. His position could not have been a pleasant one, the day was very sultry, and it was difficult to see why he did not become anæsthetised himself.

The following was the list of operations for the day as displayed on the blackboard—

- 1 Cholecystotomy
- 2 Amputation of breast
- 3 Cholecystotomy and appendicectomy
- 4 Amputation coxæ uteri and anterior fixation
- 5 Perineal prostatectomy
- 6 Perineorrhaphy
- 7 Aspiration of knee joint
- 8 Aspiration of thorax
- 9 Injection of knee joint
- 10 Spinal injection

In performing cholecystotomy Dr. Murphy made the usual linear incision in outer edge of right rectus muscle. The gall bladder was carefully isolated by suture of its wall to the parietal peritoneum. He inspected the interior of the gall bladder with an electric cystoscope. He drained with an india rubber tube sown to the edge of gall bladder and abdominal incision. He said that in 86 per cent of his earlier cases of operations for gall stones there was no jaundice in later cases this percentage was even higher. Dr. Murphy performs cholecystectomy only exceptionally, cholecystotomy, when operating for gall stones, was his usual operation.

The case of amputation of the breast was not of particular interest the history rather pointed to the tumour being inflammatory, and on incision and removal this was confirmed, therefore simple removal of the breast only was practised, but Dr. Murphy drew a diagram of the operation he performs for ordinary malignant growths in the female breast, from which it appeared that he makes a nearly horizontal incision commencing well above the anterior fold of the axilla connecting with an almost vertical incision internal to the nipple. He believes this incision, making a large skin flap, prevents cicatricial contraction in the axilla. It is, of course, drained by a button hole incision. He puts up in a plaster of Paris shield, which supports the arm in an extended position.

Before commencing the next case Dr. Murphy made remarks about the symptomatology of appendicitis and of gall stone colic, showing that it was not always possible to differentiate them, especially to be sure about the concurrence of the two, one or other being fairly established. In this case the history of appendix trouble was clear and distinct. There had been several attacks. Some, however, of the later attacks from his history were suspected of being connected with the gall bladder.

At the operation appendicitis only was found, the appendix being constricted and much displaced at its middle point a perforation with local inflammation having probably taken place in one of the earlier attacks. The actual operation was much the same as seen at Rochester, catgut purse string suture around the base of the appendix, reduplicated over the mesenteric attachment, the mucous membrane being invaginated by means of a little rod dipped in pure carbolic acid. An outer row of Lembert's sutures further closed in the stump.

Amongst remarks made whilst completing this operation was one on the serious effects of peritoneal adhesions and contractions. Sometimes it would appear that the contents of the abdominal cavity would accommodate themselves without trouble to great distortions, whilst, at others, very little traction seems to give rise to pain and discomfort. Dr. Murphy said that the frequency of these troubles, though, perhaps, they were really small as regards their seriousness, greatly lowered the confidence of the public, and their readiness to submit to abdominal operations. He said that the covering of bare surfaces after intra peritoneal operation should be invariably practised. To show the difficulty of removing such troubles by further operation, he instanced a patient of his who appeared to have exceptional faith

and perseverance, whose abdomen he had opened fourteen times to remove peritoneal adhesions, at the last operation he was successful in preventing fresh adhesion by filling the abdominal cavity with nitrogen gas.

In the case of amputation of the cervix, Dr Murphy curetted the uterus first, using metallic branched dilators. He warned strongly against the use of sharp and big curettes, and said much injury has been done by excessive curetting. His operation for retroflexion which he performed on this case was somewhat allied to the interior Alexander, as performed by Dr W J Mayo. He pulled the uterus forward, seized the round ligament some three inches outside the uterine cornu, and brought this point back to the fundus uteri, to which he sutured it at a point about half an inch internal to the cornual extremity. This of course was done on both sides, and naturally reduced the length of the round ligaments very considerably.

Dr Murphy said he considered the ordinary external Alexander a good operation in the case of small retroflected nulliparous uteri, but in large multiparous uteri and those where there are inflammatory adhesions he considers it to be either useless or dangerous.

He objects to ventrofixation. He says the movements of the abdominal wall and pelvic floor are in opposition. This leads to the formation of bands and gives pain until the band is fully extended and allows this movement, when there is danger in such bands. However, one must admit that one would like a little better assurance of the success of these internal shortenings of the round ligament.

Prostatectomy—This was a very interesting operation, in view of the predilection of American surgeons generally for the perineal route in removal of enlarged prostates. As preliminary remarks Dr Murphy said he performed the ventral operation for large tumours, and where calculi were present, but the perineal for small ones, he seemed at present to be undecided with regard to those of medium size, such as the case to be operated on. He said the mortality statistics were slightly against the suprapubic operation, but not sufficiently so for this to be a material point*. The chief point in favour of the perineal route was the greater comfort of the patient after the operation, he said advocates for the ventral route slurred over this point in their reports and remarked that, to people of refined habits, drainage of urine from the abdominal wound for two or three weeks was a very great trial and could not effectually be prevented by any form of dressing or drainage tubes. He admitted, however, that in the operation itself of perineal prostatectomy there was considerable danger of injuring the rectum, and further that there had, in his knowledge, been one or two cases of permanent perineal urinary fistulae, i.e., the completeness of the cure was not so assured, which statistics prove. The incision made was practically that for lateral lithotomy. A metal catheter also was kept in the urethra. The incision was however, brought a little further back into the ischio rectal fossa, than generally was done in lithotomy, in order to obtain more room. A finger was inserted into the rectum to warn of danger and to hitch that tube out of the way in deepening the incision.

The capsule of the gland when exposed freely was incised high up posteriorly, the finger inserted, and the gland detached as far as practicable from the capsule.

A good view was then obtained by strong retraction with rectangular retractors, and the gland removed in two separate halves by traction with a special hooked tractor and some slight aid with scissors. First the half to the operator's right hand was removed, and then that to the left. With the latter, a small oedematous third lobe came away. I think there was no doubt the prostatic urethra was opened up and at least its floor removed. The gland when brought together as would have been the case in nature was the size of a Tangerine orange.

It was said the patient would be made to sit up in bed almost at once, and the bladder would be drained by a tube for forty eight hours. Dr Murphy also said that if the patient needed it on account of collapse, he would give continuous irrigation with saline solution into the rectum.

A very complicated case of serious rupture of the perineum combined with faecal fistulae and old syphilitic cicatrization was then submitted to operation. It showed considerable hopefulness or confidence to expect to obtain union under the unsatisfactory septic conditions with which the operation started, but Dr Murphy seemed to think that, perhaps, with a second subsidiary operation, he would eventually get a good result. The steps of the operation were necessarily not carried out on any recognized plan. The only points noticeable were that he used kangaroo tendon as sutures, which he said would last seventeen days. He also secured these by lead buttons and a lead strip. No irrigation of any kind was used in this operation.

The remaining cases on the list were more or less cases under treatment by repeated aspiration or injection, the principle on which they were treated has been referred to before.

One case was brought in for inspection which was not on the list of operations, viz., an amputation of the forearm which had been performed three or four days before and was doing well, this was remarkable for having been effected practically through damaged tissue and well below the seat of a fracture of both radius and ulna, the limit of undamaged skin having been taken almost as the seat of section of the bones. One noticed that through and through drainage by a tube had been effected, and that the wound was covered by a powder which Dr Murphy uses extensively over wounds, viz., sub iodide of mercury, a brickred coloured powder, that certainly does not add to the appearance of wounds. One had hardly expected to find such a treatment, which one had believed was now very much on the wane.

The last case brought in was in some ways the most interesting as showing a treatment which, if not original, yet appeared to be unknown to all the visitors present. I did not gather whether Dr Murphy claimed this as his own idea or whether he had adopted it on someone else's suggestion, I have not, at the time of writing, access to literature sufficient to find out whether this has been referred to in surgical literature. The case was that of a young girl of about six or seven years of age who had been the subject of most troublesome nocturnal enuresis. She had been subjected to the treatment by injection of cocaine solution into the sacral canal. Four or five such injections had been made at intervals of four or five days, and already the trouble had been controlled, but usually six or eight injections are required. Dr Murphy said that up to the present he had found this a certain cure, and, so far as could be said in the time, a permanent one. He uses a specially constructed trocar syringe of a proper curve and diameter which he enters between the two little projections which denote the end of the sacral canal. It works its way up the sacral canal, and the solution is injected amongst the nerve roots of the cauda.

The solution actually used is the following—

Cocain, $\frac{3}{4}$ grain,
Sodium chlorid, 6 grains,
Aquam, 100 minims

Of this m 15 is injected the first day. The next day m 15 with m 30 of water is injected.

In further injections the quantity of water is increased but not the quantity of cocaine.

Dr Murphy believes it is the injection of fluid which effects the cure, and not the cocaine, which is useful only to allay any pain which may be caused.

It may be added that here catgut rendered aseptic, by a process by which it is iodised, is used as in the other clinics, for nearly all buried or concealed ligatures and sutures. Abdominal incisions are united by continuous

* See *British Medical Journal*, paper by J. Lunn Thomas, p. 1264, November 10th, 1906.

sutures with catgut for peritoneum, whilst interrupted silk sutures are used for skin and muscles

At Rochester one noticed more than in the clinics visited at Chicago that the peritoneum was separated from the superjacent tissues to some distance on either side of the line of incision, the continuous suture taking up a considerable margin from either side, starting well below and ending well above the extremities of the incision

Correspondence

"SMALL" INCINERATORS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The remarks in the *Indian Medical Gazette* of last month, on page 22, on the subject of Enteric Fever, remind me that I have a duty to perform and that is to make public through the medium of your Journal a new method of disposing of night soil in Cantonments. With the remarks, quoted by you from Major Robert's book on Enteric Fever, about latrines and trenching as they existed 3 or 4 years ago I quite agree. I am also very glad to see that the editor agrees with Major Roberts in the common sense view that enteric fever is not a common or formidable disease among natives. That it occurs no sensible man would deny. There is in Ambala at the present time a typical case in a native policeman that answers to every test, clinical and bacteriological. On the subject, however, of substituting septic tanks for the present methods I am not in agreement as I claim that Lieutenant Colonel Haines, R.A.M.C., and myself had discovered a much more efficient method. I have, I regret to say, but little practical experience with septic tanks, but the attempt I saw at dealing with the sewage of Fort William when I was P.M.O. in the Presidency District, led me to believe that it would need to be much better done than it was there before it could be applied to cantonments generally. I hardly see how it could be so introduced. It requires an expensive installation of tanks and filter beds, and it must be remembered that cantonments have no funds. We have always to make bricks without straw or try to do so. Having installed your tanks, etc., what are you going to do with your effluent? And how are you going to get the excreta from private compounds to the tanks?

While the state of latrines and urinals and the method of trenching night soil were all that Major Roberts describes some 3 years ago that is no longer the case now. In the beginning of 1905 I went down to Ferozepore to investigate a small outbreak of enteric fever. I went to see the urinal used by the first case. It was the afternoon and as the S.M.O. walked into the urinal before me every step he took raised a cloud of dust, every particle of which was illuminated by the oblique rays of the evening sun. There was a layer of dust as fine as flour on the floor an inch and a half deep. I saw at once that this was wrong, and I thought of some means of getting rid of the dust. I returned to Meeran Meer and thought the matter out. I went to the O.C. Station Hospital and asked him to get a watering pot with a fine rose and sprinkle the floor of the latrine every day for a week with Kerosine oil. The latrine had the usual layer of very fine dust on its floor and the usual smell of latrine. At the end of the week, the dust floor had become almost as solid as a cement floor. It was impossible to raise dust on it and all smell of latrine was gone. After this less frequent sprinkling kept the latrine in this desirable condition. Soon after this I went up to Dalhousie, and the S.M.O. there, Lt. Colonel Haines, applied Kerosine to the latrine with the same excellent result, and we found to be true what I only suspected at Meeran Meer that flies would not go near the latrine. I once saw one blown in in a gust of wind. It is found there is not a single objection to the use of Kerosine, and it is a good thing to oil the seats and all wood work with it. I found on my arrival in Ambala that Lt. Colonel Woodhouse, R.A.M.C., was using Kerosine oil to the floors of latrines in a different way with excellent results. He first of all laid the floor "leaped" in the usual way, and then had the oil applied to it. Where the soil is sandy, some such method is necessary as the oil won't make sand bind. We have found here a mixture of 1 part Kerosine, 1 fat and 4 mud mortar make an excellent floor, and if it is desired to make it antiseptic, this can be done by mixing crude Carbolic Acid in it as Lt. Colonel Haines has found that the acid is very soluble in it and retains its disinfecting properties. Any thing stronger than 4% will burn the hands in applying the mixture. Now I can positively assert after two years' experience that Kerosine oil banishes dust, flies and smell from latrines and urinals. Now for the trenching—the method perfected by Colonel Thornhill where it is properly

supervised as it has been in Ambala under the S.M.O. and O.M. seems excellent and during the last 2½ years there has been no epidemic of enteric fever in this station. But there is the excreta from the latrine and urinal to the trenching ground.

In the autumn of 1903, the S.M.O. at Dalhousie, Major Gordon Hall, came to me and asked me to recommend the construction of an incinerator to burn all the night-soil of the troops. I did so. In 1905 an order came to hold a Committee on the subject of which I was President, and the S.M.O. and Civil Surgeon were members. We then recommended two incinerators on the ground that one was not enough for such a large struggling place. This recommendation went in, but all the time I felt that there was something wrong that it was not a sound one. After thinking over the matter for a month or so, I came to the conclusion that there ought to be an incinerator for every latrine or group of latrines in close proximity. I then went to the Lieutenant-Colonel Haines and asked him to have a small incinerator made for the Station Hospital and to use the litter of the Assistant Surgeon's ponies. Within a week he had converted a big boiler into an incinerator which burned all the solid excreta of all Europeans and natives connected with the hospital, and it was found that the use of the horse litter did away with all smell.

Lieutenant Colonel Haines is now in Ambala where he has constructed incinerators in the station and section hospitals. In these he has ingeniously fitted a large receptacle in which the burning of the rubbish and feces boils the urine which thus becomes a harmless fluid useful for fertilizing the garden. Two of these are made with a metal top and chimney at a cost of about Rs. 20 each, their construction is absolutely simple. There is a square body of Katcha brick. There is an archway in front. Above the level of this, there is a series of bars of iron which need to be thick as much heat is generated on the top of the masonry there are 4 pyramidal metal plates running up to the base of the chimney. One of these plates has a wide hinged door in it. Through this some litter or rubbish is dropped on to the bars, the feces are dropped on the rubbish and over this again another layer of rubbish is dropped. Some dry litter is ignited through the arch under the bars, and the whole thing begins to burn. Lieutenant Colonel Haines has given a description of the incinerator erected at Dalhousie in the R.A.M.C. Journal, June 1906, to which I would refer any one interested. He has now had constructed one or two others with brick chimneys which are much cheaper.

There is one point in the sanitation of stations that only receives a little intermittent attention and that is the state of our servants' latrines. The fact is that hitherto it has been so hopeless and so unsatisfactory that we had been glad to brush it from our thoughts and lend it to an sanitary inspector who may choose to visit our compounds. Nothing is done to make our private latrines unattractive to flies and so they come and lay their eggs in the pans and these are put into the receptacles and from them into the Crowley carts and so transported to breed out in the trenches. About a month ago I made my sweeper build what would be more properly called *chula* than an incinerator inside my servants' latrine up against a square pillar. It is made of the bricks that were lying about the compound and mud. It is about 2½ high, about 3 wide and the well inside is about a foot wide. In front there is a small arch and above the level of this, 7 bars of iron 18" long and as thick as the little finger are laid across from side to side forming the grating. On this some stable litter is dropped, then the feces and then litter is heaped up and a small fire lighted below which sets it all burning. In this way every particle of feces and rubbish in my compound have been burnt for a month without expense and without smell. There is the smell that one eye makes when he burns the stable litter in the cold weather. The liquid part is decanted into a receptacle and is then buried in a trench in the garden which has been previously prepared by the mah, the ground being thoroughly well dug and pulverised. This is the only part of the process that requires any supervision and as a trench lasts at least a week not much is required. I find my servants take a keen interest in the process which they thoroughly appreciate and as I have had the floor of the latrine "leaped" as above described with Kerosine, tar, and mud, and the whole place is quite sweet. I now take the same interest in it that I do in hospital and regimental latrines. I am convinced that this system of burning in *chula* is applicable to every private latrine in India. For over a month I have had no visit from the Crowley cart or rubbish cart and my rubbish bin is always empty and my latrine sweet. So far these incinerators have been erected more as an experiment and an education, but I think the time has now come to let others know about the process. They have acted well in the recent wet weather, but for the litter could be stored and even dried. I have tried in every possible way to find an objectionable smell from these small incinerators and have always failed. Col. Haines tells me he has noticed a faint smell at times when too little litter was

used and some people at once found a bad smell when they learnt what was being burnt. But I will back one Crowley cart to emit more smell in an hour than 1,000 incinerators such as I have described would emit in a year. I often have to catch a train at 6 A.M. and it is no exaggeration to say that I have to cut my way through a trail of smell left by the Crowley carts the whole way from my gate to the station, a distance of two miles.

I would not advocate this method of incinerating in jails and rural communities where I thoroughly believe in the principles taught in Poore's "Rural Hygiene," but the essence of Poore's teaching is burial on the spot and such a thing as carriage for two, three or four miles in a Crowley cart was not contemplated.

Not only do I consider this method the most sanitary and efficient, but it must also be the cheapest. In the station hospital alone the saving effected is Rs 60 a month and will be Rs 80. This would much more than cover the increased value of the land from trenching.

It is also the simplest and requires hardly any supervision once properly started. Crowley carts require supervision which they cannot get as they have to begin removal from private compounds at 4 A.M.

AMBALA, { Yours, etc.,
18th February, 1907 } H. HAMILTON, C.B.,
COLONEL, I.M.S.

CIVIL HOSPITAL ASSISTANTS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In the January edition of your *Gazette*, a letter has appeared from the pen of a Hospital Assistant, echoing the voice and sentiments of the entire body of Hospital Assistants serving under Government, and I, for one, very heartily concur in this appeal and all the Bengal Hospital Assistants I have met, are, I believe, of the same opinion.

From time to time suggestions have been vouchsafed to safeguard the interests of the ill-paid Hospital Assistants comparing to their course of studies and general proficiency required before they come out successfully from any recognized medical school and the multifarious work done by them after their recruitment in the service. I hope and trust our masters under whom we are serving so loyally and faithfully so long, will take the question seriously and kindly watch that justice is being done to their poor subordinates.

It is an admitted fact that efficiency and usefulness of the department maintained by our benign Government with a philanthropic generosity chiefly depends on the zeal, energy and whole-heartedness displayed by Hospital Assistants.

So, Mr. Editor and our superior officers, it only remains for you to raise your powerful voice on behalf of your loyal and so long neglected subordinates who form the bulwark of the subordinate medical staff, mainly propagating relief to the suffering public, and to move the Government in this matter.

I shall be much obliged if you would kindly allow a space in your widely circulated journal for publication of my letter as a " rejoinder " to the appeal formulated by my friend Raghu Nath Banun Bapat in his letter to your address, under date 15th November last.

I am, Sir, yours, etc.,
SATKARI GANGOPADHYA,
CIVIL HOSPITAL ASSISTANT,
Dumka, S. P.

THE INDIAN MEDICAL SERVICE *

By D. G. CRAWFORD, M.B.,

LIEUT. COLONEL, I.M.S.,

Civil Surgeon, Hughli

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1 *Introduction*—The Indian Medical Service, as now constituted, consists of Medical Officers who have been appointed, after open competition in England, for

service under the Government of India. In organization and in rank, it is essentially a military service, though a large proportion of its members are always in civil employment. The military members are attached to one or other of the Commands and Divisions, between which the Indian Army is now distributed. The civil members are similarly attached to one or other of the several administrative provinces. But all form one corps, and are liable to be transferred, according to the exigencies of the service, to different spheres of duty. Those officers of the Royal Army Medical Corps, who are temporarily stationed in India, serve with the British troops in that country, and share the higher staff appointments. Officers of the Indian Medical Service serve with the native troops, and still preserve the regimental system. There are also subordinate medical departments, military and civil, recruited locally, consisting of Assistant Surgeons and Hospital Assistants. The senior military Assistant Surgeons enjoy honorary military rank, this service consists of Europeans and Eurasians. The Civil Assistant Surgeons and the various grades of Hospital Assistants, military and civil, are all natives of India.

2 *Historical Sketch*—From its foundation, the East India Company appears to have made some provision for the medical wants of its servants. The first ships which were sent out to India in 1600 carried Surgeons John Woodall, Surgeon to St. Bartholomew's Hospital from 1616 to his death in 1653, and one of the leading London Surgeons of his time, was employed by the Company as their "General Chirurgion." His duties appear to have consisted chiefly in the selection of medical officers for the Company's ships trading with India, and complaints were made of the inefficiency of the men appointed. Woodall drew up regulations for their guidance, and in 1617 published a work for their use, "The Surgeon's Mate, or a Treatise discovering faithfully the due contents of the Surgeon's Chest."

From an early date the Company's settlements and factories in the East were provided with medical officers, though long periods often elapsed, after the death or resignation of one factory Surgeon, before his place could be filled by a successor sent out from England. The Surgeons thus appointed were not combined into a regular service, a man was engaged as Surgeon for some particular settlement, and might hold that appointment until his death or return home. It was not until some time after the middle of the eighteenth century that the Indian Medical Service was constituted. An order, dated 20th October 1763, directed the formation of the service, by the combination into one body of the various medical officers then serving the Company in each Presidency, with effect from 1st January 1764. The service was thus, from the beginning, divided into three branches, the Bengal, Madras, and Bombay covenanted "Establishments." Previous to this date, the medical officers who held appointments as Surgeons to the scattered settlements and factories in India,

conditions of service, and prospects, which might be given to intending candidates, or other enquirers. In the pamphlet I had to point out that the pay of the I.M.S. (in 1903) was less than that received by officers of corresponding rank of the R.A.M.C., serving in India. In October, 1903, the pay of officers of the I.M.S. in military employ was increased, but the corresponding increase given to officers in civil employment was not sanctioned till March 1905. The publication of the article was deferred, pending these changes. In the meantime Sir William Hooper retired, and his successor, Surgeon General A. M. Branfoot, C.I.E., considered that there was no necessity for the publication of the pamphlet, as the standard of qualification of intending competitors was as high as could be expected. The manuscript was accordingly returned to me. Some time afterwards I showed it to the Editor of the *Indian Medical Gazette*, who suggested that he should publish it in that paper. A good many changes have been made in the article, since it was first written to suit altered circumstances, partly by bringing up to date some of the statements, partly by the omission of information which might be interesting to intending competitors, but to men already serving would be superfluous.

* When on furlough, in 1903, I was asked by Sir William Hooper, K.C.S.I., then President of the Medical Board of the India Office, to write a sketch of the I.M.S., its history,

were civilians. They had, of course, the medical charge of the small staffs and garrisons, officers and men, of the various factories to which they were posted, and occasionally did duty with these troops in the field. But up to the time of the French wars in the middle of the eighteenth century, the East India Company possessed practically no standing army. Indeed, it was partly the necessity of providing medical officers for the Company's troops then serving in the field, which led to the formation of a regular medical service, with graded ranks out of the heterogeneous body of individuals serving as medical officers.

The service, as thus constituted from 1st January 1764, was primarily a military service, though from the first many of its members held civil appointments. For twenty-four years the service was without any definite head, though the senior Surgeon in each Presidency held some vague and indefinite powers of control, or rather of recommendation to the local Government as to the control of the junior officers serving under him. In 1786 authority over the Bengal medical service was definitely delegated to a Medical Board, which held its first meeting on 29th May 1786. This Board consisted of three members, James Ellis, Andrew Williams and John Fleming, with Thomas Gillies as Secretary. The Medical Boards of Madras and Bombay were constituted about the same time. At first the Medical Boards did little more than supervise the medical staff of the Presidency towns, gradually they developed into bodies holding authority over the whole service, and advising Government in all medical matters. But, up to the end of their existence, in 1857, they remained rather consultative than administrative bodies.

The Bengal Government proceedings of 7th May 1766 provided that the medical service should be divided into two separate corps, military and civil. To encourage men to remain with the army, the two head Surgeons at the camp were allowed "the same indulgence in a share of the Salt Trade and privilege of the *Dustuck* as the other four Head Surgeons at the Settlement" [*Dustuck*, or *dastak*, literally "handclapping," and hence passport, signifies the privilege of private trade]. As the extract shows, men were transferable from one branch to the other, which, after all, is pretty much the same state of affairs as now exists. Even at that time judging from the inducement of trade profits offered to the Senior Surgeons in the army, to keep men permanently in military employment, the Civil branch of the service seems to have been preferred.

This nominal division into separate civil and military branches did not last long. A General letter from Bengal, dated 1st March 1773, in para 73 notes that when Senior Surgeon Mr Daniel Campbell succeeded, on Mr Ellice's (sic) resignation, to the headship of the service, Government found it necessary to unite the two departments of Civil and Military Surgeons "which will put them on a more equitable footing and prevent jealousies." Both Ellis and Campbell were among the medical officers serving prior to 1764. James Ellis bore the title of Physician General. He returned to India, and rejoined the service, finally retiring on 31st December 1789, and dying on board the Indiaman *Burbridge* on his passage home. Campbell had the title of Surgeon General. He retired in 1783.

For the next seventy years the history of the service was uneventful. The question of its division into two branches, one for civil and one for military duty, was more than once raised, but was always decided in the same way, viz., that the medical was primarily a military service, and its first duty was military, as the Medical Department of the Indian Army, both European and native troops, and, while its members might be lent to the Civil Department for civil employment, they were always liable to recall to military duty. In 1858, when, after the suppression of the Mutiny, the Government of India was transferred from the Company to the Crown, the manner of maintenance of all the Indian services, civil and military, was for some time

under consideration, as to whether they should be kept up on the same terms as formerly, or not. Among others, the fate of the Indian Medical Service was in the balance for several years. From 1860 to 1865 no new admissions to the service took place. During this time it seemed most probable that the Indian Medical Service would be amalgamated with the Army Medical Department, and for some years the officers of the Indian Medical Service and those of the Army Medical Department serving in India were employed indiscriminately with both British and native troops, and in civil employment. The final decision came to was that the Indian Medical Service should be kept up under much the same conditions as before, the Queen's troops being as regards medical charge under officers of the Army Medical Department, while officers of the Indian Medical Service in military employment had charge of native troops only. This decision was announced by the Royal Warrant of 7th November 1764. In February 1865 the examinations for the Indian Medical Services were recommenced, and, with the exception of a year and a half (September 1870 to March 1872), have been held regularly every half year up to the present time.

The next epoch in the history of the service came in 1895-96. In 1895 the Indian Army was reorganized. The three Presidential Armies of Bengal, Madras, and Bombay were amalgamated into one Indian Army, which was subdivided into four Commands, Bengal, Punjab, Madras, (*) and Bombay, while the officers of the Bengal, Madras, and Bombay Staff Corps were united into one Indian Staff Corps, now the Indian Army. In this reorganization the Indian Medical Services shared. The last admissions to the Bengal, Madras, and Bombay Medical Services took place on 29th July 1896. All officers entering the service after that date were placed on one list, that of the Indian Medical Service, the first officers who entered this new development of the Indian Medical Services being commissioned from 28th January 1897. While they are all placed on one list, each officer is posted, on entry, to one or other of the commands, but is liable to general service with any branch of the Indian Army, and in any part of the Indian Empire.

Admission to the Service—A diploma appears first to have been required in 1795. Previous to that year, a man nominated as Assistant Surgeon, who had not a diploma from one of the regular qualifying bodies, was sent for examination to the College of Surgeons, and, if found qualified, received a certificate as "qualified for appointment as a Hospital Mate" "to an Indianman," or "to a Presidency," as the case might be. Men entered the Army and Navy on similar certificates.

Regulations for admission of Assistant Surgeons appear in the East India Register for the first time in 1822. The Assistant Surgeon, when nominated by a Director of the East India Company, had to be over twenty years of age. As regards his professional qualification, he must have a diploma in Surgery from one of the Colleges of Surgeons, London, Edinburgh, Glasgow, or Dublin, or a degree from Glasgow University. (It is curious that Glasgow is the only University mentioned, but Glasgow was the only University which at that time was giving a degree in Surgery, C.M., as opposed to medicine.) To show his proficiency in medicine, he had to produce a certificate of having attended a course of lectures on practice of physic, and the practice of a General Hospital in London, Edinburgh, Glasgow, or Dublin, for at least six months. He was then examined as to his knowledge of anatomy, physiology, and medicine, by Dr Chambers, the Company's Physician in London.

Having passed this ordeal, the intending Assistant Surgeon had to attend a course of lectures on Hindustani by Dr Gilchrist, to execute a covenant in the office of the Company's Secretary, finding two securities

(*) The Madras Command has since been abolished.

to the extent of £500, and to pay for his passage to India, £95 at the Captain's table (first class), or £55 at the third mate's table (second class).

The purchase of a nomination, either by a cadet or an Assistant Surgeon, involved forfeiture of the appointment. Both were ranked from the date of their embarkation, according to the seniority of the Director who nominated them.

In 1828 the following rules were added, that the Assistant Surgeon must possess a copy of Annesley's "Sketch of the most Prevalent Diseases of India", and must embark within three months of the date of his acceptance of his appointment, and of his being sworn in. The condition of finding securities for £500 was left out in 1828.

In 1834 the Assistant Surgeon was required, as a condition of his appointment, to subscribe to the Military Widow's Fund, and in 1842 (in Bengal only) to the Military Orphan Society. In 1836 the age for admission was raised to 22 years, at which it stood till within the last few years. In 1836 also attendance on the practice of a Provincial General Hospital was recognised as qualifying for entrance to the service, provided that such hospital had a staff of physicians as well as of surgeons, and contained at least a hundred beds. In 1843 a certificate of proficiency in cupping was also required. In 1852 he was required to produce certificates of three months attendance on clinical instruction at a lunatic asylum, and three months at an ophthalmic hospital.

Competitive examination was introduced for the first time in 1855, the first examination being held on 8th January. The conditions of competition appear in the East India Register of that year. The examination was open to all natural born British subjects between 22 and 28 years of age, who were of sound health. The intending candidate had to produce proof of his age, a diploma in surgery, or a degree in medicine, including a surgical examination, (apparently no qualification in medicine was required from men who had a surgical diploma only), and the following certificates—(1) two courses of six months lectures on practice of physic, and six months clinical work, or twelve months clinical work and six months lectures, (2) three months clinical instruction at a lunatic asylum, (3) three months at an eye hospital, (4) a course of lectures on midwifery, with the personal conduct of at least six labours, (5) a certificate of proficiency in cupping. Attendance on a course of lectures on military surgery was recommended only, probably on account of the difficulty of finding such a course.

The examination was partly written, partly *à la voce*, and partly practical, both by dissection and operations on the dead body, and clinically at the bedside. The following subjects for examination were laid down, (1) surgery, in all branches, (2) medicine, including diseases of women and children, therapeutics, pharmacy, and hygiene, (3) anatomy and physiology, including comparative anatomy, (4) natural history, including botany and zoology.

In the following year a few modifications were introduced into the rules for examination. A certificate of good moral character was required, a course of operative surgery on the dead body was recommended, and successful candidates were given choice of Presidency, as long as a choice remained. It was also announced that examinations would be held in January and July of each year. It will be seen that not much change has taken place in the examination since its first institution.

From the first, besides the men appointed as Assistant Surgeons by the Directors at home, others, chiefly Surgeons to the Company's ships, were appointed to the service in India. Even after competitive examination had been instituted, a few men were nominated to the service, up to 1858.

When a batch of Assistant-Surgeons arrived together, their commissions were usually dated on successive

days, one after another. Occasionally two or three were dated on the same day. But the first instance of a large batch all dated the same day is that of 24th January 1855, these being the first batch admitted by competitive examination.

From 1840 to 1857 Assistant-Surgeons on first appointment appear in the Army List as supernumeraries, and are not always finally ranked in the same order as that in which they first appear. From April 1848 to January 1855 the discrepancies between order of entrance and order of final rank are especially numerous and great.

In the years 1817 to 1825 a large number of acting temporary Assistant-Surgeons appear in the Army List, below the permanent holders of the rank. About one half of these officers were finally confirmed in the service, a year or two later than their first acting appointments, the rest were not confirmed. Again, in 1841, a number of men were temporarily taken on for the China war, but the names of these men do not appear in the Army List.

Unlike the R A M C, the I M S has never had any difficulty in getting as many recruits as it wanted, except, perhaps, on one occasion. Even in the eighteenth century, service in the I M S seems to have been sought after, for we read complaints from the Court of Directors at home that the authorities in India were making too many appointments to the service locally, to the detriment of men sent out from home, who found themselves joining the service junior to the locally appointed men. The Court insisted that the men thus appointed in India should always rank junior to those sent out from England in the same year, though the latter might join later.

As long as admission to the service could be obtained only through the nomination of a Member of the Court of Directors, such nominations were eagerly sought after, and a nomination to an Assistant Surgeoncy in the I M S was regarded by newly qualified medical men as a prize. In the Medical Journals from 1850 to 1855 may be found many instances in which a Director of the East India Co. presented a nomination to the I M S to the authorities of one of the London Medical schools, who offered it as the prize of a competitive examination, for which their best senior students and residents entered. Yet, strange to say, when the service was thrown open to competition for the first time in January 1855, only 28 candidates appeared, while 30 vacancies were offered for competition. At the next examination, in August 1855, fifty vacancies were offered for which 55 candidates presented themselves, though only 46 were admitted.

As regards the relative popularity of the R A M C and the I M S, it may safely be stated that, while examination for the services were held simultaneously, competition was usually much brisker for appointments in the Indian than in the Home Army—as a rule, the candidates for the former obtained higher marks than those for the latter, though, of course, the fact must be taken into consideration that the strength of the A M D has always been greater than that of the I M S, and consequently the number of vacancies to be filled has also always been larger.

During the first six years, 1897 to 1902 inclusive, after the last reorganization of the I M S, 233 men entered the service, of whom no less than 157 held University degrees, 19 of them having graduated with honours, while twenty held diplomas in public health, in addition to their medical qualifications.

Civil and Military Employ.—The I M S is and always has been primarily a military service, members of which are temporarily lent for civil employment. This was definitely laid down when the service was first constituted in 1764, it was again enforced in the orders of 1788. The question of the division of the service into two branches, military and civil, the men in each branch being permanently posted to that branch, and not interchangeable, has again and again from

time to time cropped up. It has always been decided in the same way. The I M S is primarily a military service, it is kept up as a department of the Indian Army, and the officers in civil employ, who are more than one half of the whole number, form a great reserve, available in time of war to supplement the military branch. It is true that it would be hardly possible to withdraw every officer in civil employ from military duty—as a matter of fact nothing like one half have ever been so called up at one time,—but probably in a great emergency three fourths of them could be recalled to military duty. We have lately seen, in the South African war, how the R A M C, a purely military service, proved utterly unequal to the demands upon it numerically (though not in any other respect), and how it was necessary to supplement the medical department of the regular army by a very large number of temporarily engaged Civil Surgeons, both at home and in the field, in addition to which all the auxiliary corps, militia, yeomanry, and colonials, brought their own medical officers with them. In India private practitioners would not be available to reinforce the military medical officers, at least certainly not in anything like sufficient numbers. The reserve of the Medical Department of the Indian Army is furnished by the officers of the I M S in civil employ.

Every officer of the I M S is posted to military duty on first entering the service, and must do two years' military duty before he is eligible for civil employ. The majority apply for civil employment sooner or later, but some officers spend their whole service doing regimental duty, and others, after a longer or shorter trial of civil work, revert of their own choice to military employment.

The advantages of military employ are obvious, and are especially attractive to the younger members of the service. The work is usually not hard, except in times of war or epidemic, the pay is somewhat higher than in civil employ, there is always congenial society. For the regimental medical system is still in force in the Indian Army, the medical officer is one of the officers of the regiment to which he is posted, as much as any other officer in it, not a member of a separate department of his own, standing entirely outside regimental life. And, while there may be two opinions as to the relative efficiency of the departmental and the regimental system of medical administration, there can be only one as to which is socially the most pleasant for the officers concerned. Against these advantages, however, various drawbacks must be set. The military medical officer is not likely to get anything more than his pay. In some cases, it is true, he may get charge of a cantonment hospital, or of a small civil surgeoncy or jail, in addition to his military duties, with extra pay for the extra work, but he cannot count upon such with any certainty. And, when such extra charges are to be had, they are usually given to the senior officer available. Again, the work in the hospital of a native regiment, while light, is often very uninteresting. There is next to no surgery, and the whole professional work sometimes resolves itself into the treatment of a few cases of fever, dysentery, blistered feet, or rheumatism. In such cases the medical officer is apt to become rusty and to lose interest in his profession. And even in regimental employment, life may be deadly dull, if stationed in a small outpost, with only one or two other officers. Such duty usually falls upon junior officers. A few extra regimental appointments are held by men in military employ, three Secretaryships to Surgeon Generals, and four Medical Store Keeperships. The former are held by officers of Captain's rank, the latter usually by senior officers.

On first entering civil employment, the disadvantages, to a young officer, are probably more in evidence than the advantages. It is necessary to begin at the bottom, and it is likely that the station to which a man who has just entered civil employ is first posted, is anything but a paradise. Naturally, the junior men get the least

important stations, those in which the hospital is poorest and worst equipped, the allowances and the practice smallest, the social advantages least, and life most dull. And how dull and wearisome life may be in such a station, where his work is perhaps the only thing in which an officer can take an interest, only those who have experienced it can understand. Some such stations may afford an alleviation by fair sport, but by no means all. Such work falls heaviest on the junior officers, who are most likely to get it, and who feel it more than their seniors. Bengal, and especially Eastern Bengal, are the provinces in which these "penal settlements," as they are sometimes called, are most numerous and most unpleasant, on the other hand, civil employ in Bengal is probably more lucrative all round than in any other province, even the smallest stations affording some private practice. And the medical officer sees less of such stations than officers of the other services, the Civil Service and the Police, for the Civil Surgeoncies of a number of such stations are usually held by Military or Civil Assistant Surgeons. Nor is it likely that a doctor, as sometimes happens to men of the other services, will be the only European in his station. Having related the disadvantages, it is necessary to display also the other side of the shield. The smallest stations are not necessarily the least healthy, some of them are fairly pleasant places to live in, if only there were a few more people, and there may be good shooting. Moreover, an officer may expect before long to be removed to a better station, one pleasanter to live in or more lucrative. Appointments of very varied nature are held by men in civil employ, but the majority are doing the work of the ordinary District Civil Surgeon, in the regular line, the seniors and the men most highly thought of in the better stations, the juniors and those less highly considered in the worse stations. The ordinary Civil Surgeon's work is extensive and varied, but not as a rule oppressive in amount, except in a few stations, or temporarily for exceptional reasons, such as a cholera epidemic in the jail. It is always much heavier than that of a military medical officer, under ordinary circumstances, and the pay is somewhat less, but the total income is greater, and the very variety of the work lends interest to it, a man must be very indifferent to his work who cannot take an interest in some one or more branches thereof.

The Civil Surgeon's first duty, when he begins his morning's work, will probably be to visit his jail, of which he is Superintendent, as well as Medical Officer. Every civil station has a jail. But in some, about one out of every ten, the jail is a central jail, receiving the long term prisoners from eight or ten other districts, as well as the ordinary crop of convicted criminals from its own district. Most central jails are too onerous a charge to be placed on a Civil Surgeon, in addition to his own work. Except a few of the smaller ones, each has therefore a medical officer as "whole time" Superintendent. In such cases the Civil Surgeon has nothing to do with the jail, no allowance, and no work nor responsibility. The ordinary district jail contains from 50 to 400 prisoners, usually over 200, and the jail allowance varies from Rs 50 to Rs 100 a month, according to the number of prisoners in the jail, between 100 and 200, to be called ones have, under the Superintendent, native officials, a jailor or *daren* of military officers jailor or *nair dargah*, and a Civil Surgeon. They will have effect in subordinate charge of the jail. In smaller jails have no jailor, only officers who can, officials. The warder guard, appear at the high profile orders of the Superintendent, be granted to successful the size of the jail. The Civil Surgeon from one allotted to appear more than according to circumstances, the examination, eligible for the reward unless he central jails are held by officers before the completion of ten years, their own duties, with of his first arrival in India. No month be made on account of leave or

From the jail the Civil Surgeon will be held quarterly, on the first to the hospital, where, in July, and October of each year,

hour's work at the least, it may be two or three hours, sometimes, in times of pressure, even more. The time spent in hospital, however, depends a good deal on a man's own enthusiasm and fondness for the work. In subordinate charge of the hospital he will usually find a Civil Assistant Surgeon, a graduate of one of the Indian Universities, a highly trained and educated officer, speaking English fluently, and generally quite competent to take charge of the hospital, and the other medical duties of the station, during the Civil Surgeon's frequent absence on inspection duty. In some of the smaller hospitals the officer in subordinate charge is a Civil Hospital Assistant, a diplomate of one of the vernacular medical schools. Men of this class vary very much in their work and their professional attainments, the best of them are very good, and it is usually the best who are serving in stations where there is no Assistant Surgeon. Almost all of them have enough knowledge of English to understand it and make themselves understood. At the hospital the Civil Surgeon will probably do most of the operative surgery, though it is advisable to let the Assistant Surgeon also have a fair share of this the most interesting part of the work, to keep up his interest and knowledge. The amount of operative surgery varies greatly in different places, with the locality (e.g., stone is very common in some parts, almost unknown in others), with the equipment of the hospital, which must chiefly depend upon its income, with the skill and popularity of the Civil Surgeon and the Assistant Surgeon, and with the accessibility of a larger or more popular hospital.

Another daily duty of the Civil Surgeon is his office where, with a native clerk to assist him, he will have to deal daily with a pile of correspondence, from the Inspector General of Hospitals and Sanitary Commissioner, from the Magistrate, from the dispensaries under him, from neighbouring Civil Surgeons, etc. Office work is seldom very urgent, it can usually be done, if preferred, in the afternoon. It occupies about an hour a day, sometimes more, but often less. The clerk is, as a rule, competent to prepare the numerous returns, which form the bane of the lives of most officers of all services.

There will also be a police hospital in the station, which has to be visited daily. This seldom takes much time. A Civil Hospital Assistant is in subordinate charge, there are seldom many patients, and those sometimes not seriously ill. This can be fitted in when most convenient, according as it is near the jail, the hospital, etc.

A very important part of a Civil Surgeon's duties is the performance of medico-legal post mortems. These, however, are not nearly so numerous as they were twenty years ago, though even now the majority never get the length of requiring evidence in court. A post mortem should, as a rule, be done as soon as possible after the body has reached the mortuary, and the papers have been received by the Civil Surgeon from the police, though the time this work is done will depend more or less upon the locality of the mortuary, etc. If possible, one will naturally prefer to do it after the hospital visit, rather than before. The Civil Surgeon always has the good moral character in cutting up the body.

surgery on the sits to patients, official or private, will successful candidate on various circumstances, such as the as long as a choice the locality of the patient's residence, that examinations would have to attend gratuitously, at their of each year. It will their duties, all civil officers at has taken place in the district, European or native, institution 50 a month. Attendance on

From the first, besides the gratuitous, but private practitioners by the Director's being for a civil officer, Surgeons to the Company's sharing with him, to pay the service in India. Even after in the year for medical had been instituted, a few men officers are entitled to free service, up to 1858.

When a batch of Assistant-Surgeons medicines, such their commissions were usually by Government

The Civil Surgeon is also *ex officio* Superintendent of Vaccination and Inspector of Factories in his district. As Superintendent of Vaccination, he will have from 20 to 50 vaccinators and from two to six native inspectors of vaccination under him. Vaccination work is done almost entirely in the cold weather, between October and March. For the inspection of factories fees are paid by Government to the Civil Surgeon, Rs 16 for each inspection, if the factory employs less than 200 hands, Rs 32 if it employs over 200, as most of them do, the number in some running up to five or six thousand. In many, indeed in most districts, there are no factories, hence no factory inspection and no fees, in some few the amount of fees averages Rs 100 or even more monthly throughout the year. Factories should be inspected at least twice yearly.

In a very few districts the Civil Surgeon is Superintendent of a Lunatic Asylum or of a vernacular Medical school, the allowance being usually Rs 200 or Rs 250 a month for each.

Every Civil Surgeon has to do a certain amount of touring and inspection work during the year, inspecting dispensaries and vaccination. The number of outlying dispensaries in a district varies from two or three up to about forty, it is usually from 12 to 20, the more dispensaries, the heavier the office work. Theoretically he is supposed to inspect each dispensary four times a year, but where there are over twenty dispensaries this becomes an absolute impossibility, having due regard to work at head quarters. Practically, the amount of inspection work, so long as each dispensary is visited at least twice a year, is left very much to the Civil Surgeon's own energy and discretion. Vaccination inspection is done while visiting dispensaries in the cold weather. To inspect 3,000 or 4,000 cases of vaccination in the season is fair work, few do as much as 10,000. When travelling on duty, the Civil Surgeon receives travelling allowances at the same rates as other Civil officers, double first class fare by rail, by road eight annas a mile if he covers more than twenty miles in a day, five rupees a day when he does less, or when halting. The military officer, travelling on duty, receives a warrant, entitling him, and his family if he has one, to travel first class, he also is allowed to take with him, free of expense, several servants, a quantity of luggage, and, if he is a mounted officer, one or more horses.

The majority of the medical officers in civil employ are Civil Surgeons of districts, but there are many other branches of civil medical work.

Some thirty men are employed as Residency Surgeons under the Foreign Office, Surgeons to the Residents at Native Courts, etc. Some of these appointments are among the pleasantest open to the service, some are also lucrative. Others are in desolate and distant places, "remote, unfriended, melancholy, slow." Naturally the seniors usually hold the best appointments. Either as a Civil Surgeon or as a Residency Surgeon, it may happen that a man never sees a bad station, but such a case is exceptional. An officer who recently retired, with 33 years' service, got one of the pleasantest and most favourite Residency Surgeoncies at three years' service, held it for 25 years, and then put in his last five years as an Inspector General of Civil Hospitals.

The Jail Department employs a considerable number of men. Its advantages are, higher pay than the regular line, a free house, service in fairly good stations, and the chance of becoming an Inspector General of Jails, of whom there is one in each province, highly paid appointments, usually filled from the jail department. The disadvantages are monotony of work, and separation from professional, especially from surgical work.

The Professorships in the Medical Colleges are perhaps the appointments most sought after. They are by no means well paid, considering that they are supposed to attract the very best men in the service, but lead to professional reputation, and usually carry with them a large, sometimes a very large, private practice. At the same time, the expenses of living in the

Presidency towns are great, and the work of a man, who runs a large private practice, as well as holding a University Chair, and does his duty by both, is very hard indeed, while the amount earned is much exaggerated, as no doubt is also the case with the most successful men at home.

There are several junior appointments, in connection with the medical colleges and hospitals in the Presidency towns, which are well paid for the junior men who hold them, and give great opportunities for professional work, sometimes for professional reputation.

The Scientific appointments are few in number, but are usually well paid. The appointment of Superintendent of the Calcutta Botanical Gardens is about the best, the officer holding it is also Government Quinologist, and Professor of Botany in the Calcutta Medical College, and receives an extra Rs 200 a month, as well as a good house, rent free, in the Botanical Gardens at Sibpur, on the Hughli, opposite Calcutta. There is also a junior Botanical appointment, that of Curator of the Herbarium, the holder of which receives only grade pay and a house, but usually succeeds in turn to the higher appointment. There is a second Botanical garden, at Saharanpur, in the United Provinces, the charge of which has been held by some of the most distinguished Botanists in the service, Royle, Falconer, and Jamieson, but for many years past the Superintendent has not been a service man.

Two appointments in the Natural History line are open, those of Superintendent of the Calcutta Museum, with a good house in the Museum grounds, and Surgeon Naturalist to the Indian Marine Survey, serving on the Royal Indian Marine Steamer *Investigator*. These scientific appointments are usually, but not necessarily, held by men in the I M S. They have the great advantage that a man draws his pay, and that good pay, for pursuing his own tastes and hobbies, also that they are very independent positions, much more free from criticism than any appointment in the regular line of any service.

The Chemical Department furnishes Professors of Chemistry and Chemical Examiners, one to each province. The appointments are congenial to those who have a taste for chemistry, but not very highly paid.

There are a few Bacteriological appointments. Each medical college has a Professor of Pathology, who pursues this subject, and there are a few other appointments outside the colleges. These, again, are not necessarily held by men in the I M S.

The Sanitary Department employs a good many officers, one Sanitary Commissioner for each province, with from one to three Deputy Sanitary Commissioners. The Sanitary Commissioners are usually officers of from twelve years service upwards, and are well paid. The Deputy Sanitary Commissionerships are neither very well paid nor very popular, men are generally ready to leave them for fair Civil Surgeoncies. The Sanitary Department requires better pay in the junior appointments to attract, and keep, good men. A few of the largest cities have special Health officers, fairly well paid, who may or may not be service men.

There are four appointments in the Mint, which are usually held by I M S men, those of Assay Master and Deputy Assay Master in the two mints, Calcutta and Bombay. The Assay Masterships are about the best paid appointments open to men in the I M S. They are always filled by the promotion of the Deputy Assay Masters, and these appointments require a special training, which few men entering the service have undergone.

During last century a good many men drifted off into employment in the "Commissions" of the non-regulation provinces, as Magistrates or Deputy Commissioners, but for the last quarter of a century no man in the I M S has been thus employed. A few also served as Political Agents and Residents in the Political Department, but no I M S man is so serving now, the last who did so was Sir George Robertson, of Chitral fame.

Paragraph 22 of the India Office Memorandum definitely grants the right to private practice, so long as it does not interfere with Government work, to all medical officers, except those holding certain specified appointments. The first mention of private practice is in a letter from the Court of Directors, dated 22nd February, 1764, paragraph 119, which runs as follows: "You inform us that you have appointed two additional Surgeons at Calcutta, that some further assistance is necessary on account of the increased number of persons in our service, civil and military, we cannot but admit, but with respect to the inhabitants, they most certainly ought to reward the Physicians who attend them at their own expense."

(To be continued)

Service Notes.

The following resolution by the Government of India, Finance Department, 17th December 1906, is of importance to Civil Surgeons—

"Read—Letter from the Government of Bombay, No 5524, dated the 6th June 1906, regarding the grant of travelling allowance to an officer of Government travelling in attendance upon another officer who, being in ill health, is advised by competent authority to proceed to a Presidency town or elsewhere to procure further medical advice, and requires attendance on the way.

His Excellency the Governor General in Council is pleased to lay down the following rules for the grant of travelling allowance to an attendant accompanying a sick officer proceeding on leave on medical certificate, or undertaking a journey with the object of procuring further medical advice—

1. Government will not pay the travelling allowance of such an attendant, unless he is a Medical Officer, whose official duty it is to attend on the patient, or is a Government officer ordered or requested by the Medical Officer to accompany the patient.

2. If a Government servant, under the advice of the Civil Surgeon or other Government Medical Officer whose official duty it is to attend him professionally, is required to undertake a journey to a Presidency town or elsewhere, either when proceeding on leave on medical certificate, or to procure further medical advice, and the Civil Surgeon (or other Medical Officer as above) considers that it would not be safe for him to make the journey without attendance on the way, the Medical Officer may, either himself accompany the patient to his destination, or depute or arrange with some other Government officer to do so.

3. In such a case, the attendant shall be deemed to have been travelling on duty, and may draw travelling allowance at the usual rates for the journey both ways.

Ordered, that a copy of this Resolution be communicated to all Departments of the Government of India, to all Local Governments and Administrations, to the Heads of Departments subordinate to this Department, to the Comptroller and Auditor General and to all Accountants General and Comptrollers."

THE following appeared in India Army orders, dated 28th January—

"Languages—Examination—With the approval of the Right Honorable the Secretary of State for India, the Government of India sanction the institution of a new literary examination in Urdu, intermediate between the higher standard, and the high proficiency tests, to be called the 'Proficiency' examination.

The following rules for the examination of military officers are published for general information. They will have effect from the 1st July 1907—

I. The examination will be open to officers who can, under the existing regulations, appear at the high proficiency examination in Urdu.

II. A reward of Rs 750 will be granted to successful candidates.

III. No officer will be permitted to appear more than three times as a candidate at the examination.

IV. No officer will be eligible for the reward unless he passes the examination before the completion of ten years, counted from the date of his first arrival in India. No exception to this rule will be made on account of leave or any other cause.

V. The examination will be held quarterly, on the first Monday in January, April, July, and October of each year,

by the Boards of Examiners at Calcutta and Madras and the Civil and Military Examination Committee at Bombay. Officers will be examined each in his own presidency, those serving in Burma, will be examined in Madras.

VI Officers desirous of attending the examination must submit their applications, to reach the Brigade of Divisional office by the 1st and the Secretary of Board of Examiners, by the 15th of the preceding month.

VII The examination will be of a searching nature, the tests both oral and written, must be performed with such excellence as to indicate real proficiency.

VIII To qualify as proficient, candidates must obtain not less than 35 per cent of marks in each subject and 60 per cent in the aggregate.

IX The following are the subjects of examination —

	Marks
(a) Written translation from English into Urdu	100
(b) Written translation into English of passages from the prescribed text book (Kalam-i-Urdu)	100

Note—The text book is obtainable either from the office of Board of Examiners or from Messrs. Thacker, Spink & Co., Calcutta.

	Marks
(c) An essay paper in Grammar	100
(d) Reading and translating in Urdu manuscript of moderate difficulty	100
(e) Conversation, including a paper of short idiomatic sentences in English to be translated into Urdu orally at sight	200

THE following appeared in India Army order, dated 28th January —

"Pensions—Officers—The Army Council have approved of the following scale of gratuities for the widows and children of officers killed in action, in place of the gratuities based on a year's pay authorized by Articles 643 and 644 of Royal Warrant.

This scale is intended to be applied in cases of staff, regimental and departmental officers, according to the rank by which the pension to the officers' widow is determined, and it will be held to govern all awards of gratuity which may be made pending the amendment of the Warrant —

	£
For the widow of a Field Marshal	3,500
General	3,000
Lieutenant General	2,000
Major General	1,000
Brigadier General	900
Colonel	600
Lieutenant Colonel	400
Major	300
Captain	250
Lieutenant	140
Second Lieutenant	100

For each child one third of the above amounts.

2 The question as to the gratuities to be paid to wounded officers is still under consideration."

SURGEON GENERAL A SCOTT REID, I M S, M B, C B, Surgeon General of the Punjab Army, retired from the service from 25th March 1907.

The following Lieutenants are gazetted to be Captains, I M S, dated 30th January, 1907.

Hugh Basil Drake
Ernest Charles Hodgson
William Sim McGilivray, M B
William Gillitt M B
William Frederick Brayne, M B
Charles Harrison Barber, M B
William Turi, M B
Merwan Sorab Iani
Hugh Watts, M B
Ivor Davenport Jones, M B
Walter Taylor Emlyson
Seymour Witworth Jones
William Thomas McCowen
Hugh Ellis Stranger Leathes
John Anderson, M B
Edmund Arthur Roberts
Geoffrey Gairdner Hirst
Michael Joseph Quirke, M B
John Morgan Holmes, M B
Maurice Forbes White, M B

CAPTAIN C R BAKHLE, I M S, was granted one month's privilege leave.

IN modification of the orders of the 5th May 1906 and the 3rd July 1906, it is notified that Captain R McL Dalziel,

I M S, Officiating Superintendent of the Central Jail, Madras, was on combined leave for six months, with effect from the 11th May 1906, viz., privilege leave for two months and four days under article 260 of the Civil Service Regulations, and special leave for the remaining period under article 316 of the Regulations.

CIVIL ASSISTANT SURGEON K V AMIN, L R C P and S (Edin), resigned, and Mr. S C Chuckerbutty, L R C P and S (Edin), is appointed to be a 3rd grade Civil Assistant Surgeon on probation.

LIEUTENANT D STEEL, Indian Medical Service, Acting Assistant to Director, Bacteriological Laboratory, Bombay, passed an examination in Urdu by the Lower Standard in Part I at Bombay on 1st October, 1906.

THE following promotions of Lieutenants to be Captains, I M S, dated 31st August 1906, are now published —

Robert Kelsall, M B
John Hay Burgess, M B, F R C S
Charles Hildred Boddie, M B
John McCallum Anderson Macmillan, M B
Clifford Alchun Gill
William Edward James Tuohy
Terence Francis Owens
Richard Francis Steel, M B
George Francis Innes Harkness
Arthur Charles Ingram, M B
Gordon William Macdonachie, M B
Ernest William Charles Bradfield, M B
Alexander William Montgomery Harvey, M B
Charles Isherwood Brierley
John Brown Dalzell Hunter, M B
Edward Temple Harris

This is in substitution for the notification regarding the promotion of these officers in the *London Gazette* of the 13th November 1906.

THE following promotions of Captains to be Majors, I M S, dated 29th January 1907, are now published —

Charles John Robertson Milne, M B
Algeron Francis Stevens
Clement Henry Bensley
Francis Hammond Watling, M B
Samuel Evans, M B
Edgar John Morgan, M B
James Haldane McDonald, M B
Frank Wall
Charles Montague Mathew
John Stephenson, M B, F R C S
Frank Needham Windsor, M B
Walter Burnie Turnbull, M B
Ernest Edwin Waters, M B
Edmund Moritz Illington, F R C S E
Charles George Webster, F R C S E

There is more in this than meets the eye. The last six officers on this list have received six months' accelerated promotion, viz., Majors Stephenson, Windsor, Turnbull, Waters, Illington and Webster.

CAPTAIN W V COPPINGER, I M S, on return to Bengal from Eastern Bengal and Assam, was appointed Civil Surgeon of Purlia.

CAPTAIN W LETHERIDGE, I M S (Madras), an Agency Surgeon of the 2nd Class, is granted privilege leave for three months, with effect from the 5th December 1906, combined with furlough for eleven months and twelve days, under Articles 233 and 303 (b) of the Civil Service Regulations.

CAPTAIN N E H SCOTT, I M S is appointed to officiate as an Agency Surgeon of the 2nd Class and is posted as Agency Surgeon at Maskat, with effect from the 5th December 1906.

CAPTAIN J W WATSON, I M S, (Bombay), Medical Officer, His Britannic Majesty's Consulate at Tumbhat, Hyderabad, is appointed to hold charge of the current duties of the office of His Britannic Majesty's Consul at Tumbhat, Hyderabad, in addition to his own duties, with effect from the 4th December 1906, and until further orders.

CAPTAIN J E CLEMENTS, I M S, whose services have been placed temporarily at the disposal of this Government by the Government of India in the Home Department, is appointed to officiate as Superintendent of the Montgomery Central Jail and Civil Surgeon of Montgomery with effect from the afternoon of the 17th of January 1907, *vice* Major G Y O Hunter, I M S, whose services have been replaced at the disposal of the Government of India.

LIEUTENANT COLONEL A W DAWSON, I M S, is appointed to hold collateral civil medical charge of Roorkee, with effect from the 19th January 1907, *vice* Lieutenant R T Collins, R A M C

MAJOR C E L GILBERT, I M S, has been granted three months' extension of leave (*m c*)

DR N F SURVEYOR, M A B Sc, M D (Bo), M R C P (Lond) D P H (Camb), is appointed Professor of Bacteriology in the Grant Medical College, Bombay

LIEUTENANT COLONEL G J H BILL, M B, I M S, Superintendent of the Lunatic Asylum, Rangoon, on being relieved by Captain H A Williams, B A, M B, D S O, I M S, is appointed to be Superintendent of the Central Jail, Rangoon

LIEUTENANT COLONEL G J H BILL, M B, I M S, Superintendent, Central Jail Rangoon is appointed to officiate as Inspector General of Prisons Burma, during the absence on leave of Lieutenant Colonel E P Frenchman, I M S, from 21st January 1907

THE services of Captain L P Stephen, M B, I M S, are replaced at the disposal of H E the Commander in Chief

DATING from the 1st March 1907, the medical charge of cantonment hospitals in the Northern Command will be held by officers of the particular service specified in the list below—

By an officer of the Royal Army Medical Corps

Amritsar
Campbellpore
Cherit
Dagshai
Dillhouse
Jutogh
Kasauli
Murree
Nowshera
Rawalpindi
Solon
Subathu

By an officer of the Indian Medical Service

Ambala
Dharmasala
Ferozepore
Jullundur
Lahore Cantonment
Multan
Peshawar
Sialkot

MAJOR H C L ARNIM, D P H, I M S, is granted, from the date of relief, such privilege leave as may be due to him on that date and six months' study leave, in combination with furlough for such period as may bring the combined period of absence up to one year

HIS Excellency the Governor of Bombay in Council is pleased to appoint Assistant Surgeon Ramchandra Hanmant Telang, I M S, to act as Civil Surgeon, Bhopal, during the absence on leave of Captain C R Bakhle, I M S, on pending further orders

HIS Excellency the Governor of Bombay in Council is pleased to appoint Captain W O S Murphy, I M S, to act as Deputy Sanitary Commissioner, Gujarat Registration District, *vice* Major H C L Arnim, D P H, I M S, proceeding on leave, pending further orders

LIEUTENANT COLONEL D W SCOTLAND, I M S, has been permitted to retire from 26th March 1907. He entered the service in September 1886, and has served for many years past as a Civil Surgeon in many stations in the United Provinces. He has been at home on furlough for the last two years. The Army List credits him with no war service

CAPTAIN H INNES, I M S, Civil Surgeon Balisal, E B and A, has been granted combined leave for 21 months

CAPTAIN I H DELANY, M B, I M S, has been granted a further extension of leave (*m c*) for six months

"SANITARY INSPECTIONS OFFICERS' MESSRS.—With reference to paragraph 68, Army Regulations, India, Volume VI, Officers of the Royal Army Medical Corps and Indian Medical Service when carrying out their sanitary duties will include the officers' mess in their inspections, paying particular attention to the kitchen and surroundings"

THE above is a step in the right direction, and is especially necessary on the messes of British regiments in India

LIEUTENANT COLONEL F F PERRY, F R C S, I M S (Ben gal), Principal and Professor of Surgery, Medical College, Lahore, is granted special leave on urgent private affairs for 3 months, with effect from the 1st April 1907

CAPTAIN F D BROWN, M B, I M S, is appointed to be Superintendent, Cellular and Female Jail and Civil Surgeon, Port Blair, with effect from the afternoon of the 3rd January 1907

MAJOR O C BARRY, I M S, Civil Surgeon, Maymyo, was granted six weeks' privilege leave, and Major C R Perce, R A M C, acted for him in addition to his other duties

CAPTAIN E L PIRRY, I M S, became Civil Surgeon of Dharmasala (Kangra) on the grant of furlough to Major D T Lane, I M S

MAJOR A G HENDRY, I M S, is granted combined leave and Captain C I Brierley, I M S, is appointed to act as Civil Surgeon of Sangoi as a temporary measure

CAPTAIN J M WOOLLEY, I M S, Superintendent of the Central Jail, Bhagalpur has been granted combined leave for 16 months, from 27th February

MAJOR B CHATFIELD, M B, M Ch (Dub), has been appointed Civil Surgeon of Serampore

ON return from furlough Major J T Calvert, I M S, goes to Howrah as Civil Surgeon, and Lieutenant Colonel Dinn, I M S, goes to the Medical College, *vice* Lieutenant Colonel Harris, I M S (granted leave)

MAJOR C DUER, I M S, Civil Surgeon of Rangoon, has been granted (*m c*) an extension of furlough for six months

LIEUTENANT COLONEL R H CASTER, I M S, was on study leave at home from 1st October 1906 to 14th December 1906

LIEUTENANT COLONEL H W STEVENSON, I M S, was granted nine months' combined leave on medical certificate

MAJOR V B BENNETT, F R C S, I M S, acts as Superintendent of the Medical School, and Civil Surgeon Hyderabad, Sindh, during the absence of Lieutenant Colonel Stevenson

ASSISTANT SURGEON P P FERNANDEZ, acts as Civil Surgeon, Panch Mahals, *vice* Major V B Bennett, I M S

THE Commander in Chief in India is pleased to appoint Lieutenant A S M Peebles, I M S, to be a specialist in *psychological medicine*, in the Eastern Command

CAPTAIN T HUNTER, I M S, Civil Surgeon, Rai Bachi, has been granted combined leave, with study leave for a total period of twenty months, from 25th February 1907

MAJOR C H L PALK, I M S, Surgeon Fourth District, Madras, has been granted two years' combined leave and is not due to return till 6th January 1909

CAPTAIN C G WEBSTER, I M S, has been appointed Acting Surgeon, Fourth District, Madras

CAPTAIN J W ILLIUS, I M S, was due back from privilege leave on 28th February 1907

WE shall publish in our next issue the revised regulations for study leave to I M S officers, which appeared in *Gazette of India*, March 16th, 1907

APPOINTMENTS—MEDICAL—The following distribution list of appointments to Staff Surgeoncies and Cantonment Hospitals in the Eastern Command between the Royal Army Medical Corps and Indian Medical Service Officers is published for information and guidance—

Stations	APPOINTMENTS	
	Staff Surgeoncy	Cantt Hospital
7th (Meerut) Division		
Ramkhet		R A M C
Chakrata		R A M C
Shahjehanpore		R A M C
Meerut	R A M C	I M S
Bareilly	R A M C	I M S
Agia		I M S
Dhura Dun	I M S	

Stations	APPOINTMENTS	
	Staff Surgeons	Civil Hospital
<i>Sth (Lucknow) Division</i>		
Lucknow	R A M C	I M S
Sitapore		R A M C
Naini Tal	R A M C	
Fyzabad	I M S	R A M C
Allahabad	R A M C	I M S
Cawnpore		I M S
Benares		I M S
Calcutta	R A M C	
Dum Dum		R A M C
Barrackpore		I M S
Darjeeling		R A M C
Dinapore		I M S
Shillong	I M S	

MEDICAL DEPARTMENT—AMBULANCE—The Government of India have sanctioned* the following measures in connection with the scheme for the reduction of the establishment of the Army Bearers Corps—

- (1) No 30 Company to be absorbed into No 2 Company
- (2) No 32 Company to be absorbed into No 31 Company
- (3) No 13 Company to be absorbed into No 12 Company

2 The Assistant Surgeons released by these measures will revert to ordinary military duty, the Pay Non Commissioned officers will revert to regimental duty, and the bearer clerks will be transferred to fill any existing vacancies in other Companies failing which they will be discharged from the service

MAJOR C MILNE, I M S, obtained three months' privilege leave from 18th January, and Assistant Surgeon P C Mukerji, acted as Civil Surgeon, Gonda, in addition to his own duties

CAPTAIN J MCA MACMILLAN, I M S, took over charge of Buxar Central Jail on the forenoon of 9th January, relieving Captain N S Wells, I M S

LIEUTENANT COLONEL J L POYNDR, I M S, is posted to Raipur District as Civil Surgeon, and Lieutenant Colonel A Silcox, I M S, has been granted one year's combined leave

CAPTAIN W J NIBLOCK, I M S, has applied for two months' further extension of furlough, and so will not be back in Madras till the end of October

CAPTAIN A MILLER, I M S, is due back on 10th June from two years' combined leave

CAPTAIN F D S FAIRER, I M S, is due back from 16 months' combined leave on 22nd June 1907

CAPTAIN D C KEMP, I M S, is posted to Godavari as District Medical and Sanitary Officer

CAPTAIN J J ROBB, I M S, was granted one year's leave on 1st December 1906

CAPTAIN D G RAI, I M S, has been ordered to attend a three months' X Ray course at the Dehra Dun Institute

An extension of leave for one year has been granted, on medical certificate, to Captain W H Kenrick, I M S, a Civil Surgeon, C P

LIEUTENANT COLONEL C L SWAINE, I M S, was granted study leave from 1st July to 31st October 1906

LIEUTENANT COLONEL R B ROE, I M S, is posted to Nagpur as Civil Surgeon

MAJOR ANDREW BUCHANAN, I M S, is posted to Amraoti, as Civil Surgeon, and Superintendent, Central Jail

CAPTAIN W S WILLMORE, I M S, is granted combined and study leave for 21 months

CAPTAIN V E H LINDSAY, I M S, at home on leave, was granted study leave from 19th July to 30th November 1906

THERAPEUTIC NOTES AND PREPARATIONS

WE direct attention to the excellent CLINICAL THERMOMETERS made by Mr G H Zeal, of 82, Tunmill Street, London, E C. The aseptic thermometer has the figures, &c, enclosed within a glass outer cover, and it can be washed in the strongest antiseptic fluid without the black coming out of the figures. Kew certificates are supplied and they can be had on the Centigrade scale as well as on the Fahrenheit scale

Perhaps the best of Zeal's thermometers is the REPELLO, it needs no shaking down as the mercury descends by pressing down a small flat bulb, and it cannot roll another great advantage. This thermometer can be had at various prices for 5s to 7s 6d. The 30 second one is specially recommended and said to be reliable. For hospitals, attention should be directed to the aseptic thermometer in glass containers, they cost from 20 to 30 shilling per dozen are very good value for the money, as they are guaranteed accurate. We recommend medical men to obtain Zeal's catalogue and illustrated price list

J D Riedel of Berlin sends us specimens of his MERGAL, a chloride of mercury, in gelatine capsules. This is claimed to be as good or better than any other method of using mercury in syphilis. It is certainly an elegant preparation, and the small black capsules are easy to swallow

The same firm send us also specimen pills of GONOSAN, which contains in small neat capsules, the active constituents of Kawa Kawa and East Indian Sandal wood oil. It is said to be a valuable urine antiseptic and most valuable in urethral disorders. These are obtainable from Bathgate & Co, Calcutta, and Kemp & Co, Bombay. Messrs Evans Sons, Lescher and Webb, Ltd, of London and Liverpool send us specimens of their minute pills of alginate copper or CUPRALGIN, each minute gelatine coated pill contains 1/4 grain of cupralgin. It is hardly necessary at this time to recommend EUQUININE—the Ethylcarbonate of quinine. A recent article by Dr Sylvan in *Aichangfu Schiffs and Tropfen Hygiene* strongly recommended this method of taking quinine. It is given in fairly large doses from 7 grains upward for adults

The great recommendation of the drug is that we can in this way administer quinine without the unpleasant taste. Euquinine is practically tasteless. For use with children it is invaluable. Messrs Schneider, Smidt & Co, Old Court House Street, Calcutta, will be glad to send specimens of Euquinine to medical men wishing to give it a trial

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta

Annual Subscriptions to the *Indian Medical Gazette*, Rs 12, including postage, in India Rs 14, including postage, abroad

BOOKS, REPORTS, &c, RECEIVED —

Sanitary Commissioners Report, India
Central India Report
Rajputana Report
Green & Co Dictionary and Encyclopedia of Medicine
The Nursing Budai translated by M Honey (Caxton Press)
Intussusception (T T Pentland)
Advanced Medical Studies By Mr Reikman Godlee
MacCabe's War with Disease (Bailliere, Tindall & Cox)
Aids to Surgery Cumming (Bailliere Tindall & Cox)
The Madras Hospital Report
The Madras Maternity Report

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

Major H Smith, I M S, Jullundur. Capt Barnardo, I M S, Bhagalpur. Capt O Moses, I M S, Barisal. Major Nott, I M S, London. Major Calvert, I M S, Calcutta. Capt Cornhill, I M S, Coonoor. Lt Col Poynder, I M S, Raipur. Major Maynard, I M S, Calcutta. Capt Thurston, I M S, Monghyr. Major Fischer, I M S, Dehra Doon. Lt Hirst, I M S, Major Wood, I M S, Silchar. Lt Col Banatvala, I M S, Khandwa. Major Wimberley, I M S, Lahore

* Army Department No 960 A, dated 4th December, 1906

Original Articles.

THE CULTIVATION AND PRESERVATION
OF CALF LYMPH

By J. NIELD COOK, D.P.H.,

Health Officer, Calcutta

THE credit for the introduction of preserved calf lymph in India is due to Col. W. G. King, I.M.S., who carried out a series of experiments extending over five months with glycerine, vaseline and lanoline as preservatives in the year 1890, and finally decided on lanoline as being the best for use in India. In the following year Surgeon-Major Dymott, I.M.S., who was then Deputy Sanitary Commissioner of Madras, showed me some glycerinated lymph from the French Settlement at Saigon, which we tested together on calves and infants with such good results that I started making this preparation in the Madras Municipal Depot and for some years supplied it to Municipalities over a considerable part of the Presidency. This was some years before this method of preserving lymph was adopted in England. Since then I have visited the vaccine establishments in Paris and London and received useful suggestions from Monsieur Chambon and Dr. F. R. Blaxall. Monsieur Chambon, besides being an expert in vaccination and doing excellent work in perfecting the system in his country, is an enthusiastic antiquarian and has in his possession a valuable collection which includes an autograph letter from Jenner and Georgian caricatures, showing cows' heads growing out of people's arms as the result of vaccination. I am fortunate in having working with me a subordinate officer of exceptional experience in Mr. Subroya Chetty, who carried out Col. King's experiments in 1890 and has been engaged in calf vaccination ever since. So I think that if I note down a few practical points on the cultivation and preservation of calf lymph they may be found useful by young medical officers who are placed in charge of lymph establishments in India.

2. Vaccinifers.—I have tried a number of animals and most of them will take, but I only use two, the cow calf and the rabbit, the former to yield the supply of lymph, and the latter to test and renovate it. If both sexes are available heifers are preferable to bull calves, as there is less risk of the inoculated surface being soiled by urine. Six months is generally accepted as the best age for vaccination calves, but as Indian calves are small and young ones not readily obtainable, we use animals up to 2 or even 3 years of age with quite good results. In this part of India calves do not appear to be well

fed. Consequently most of them are more or less emaciated when they are brought to the depot. If they are vaccinated in this condition they give poor results, so I make a practice of keeping them for a period of 3 to 6 weeks under observation and feeding them up. This is also a safeguard against epizootic disease. I have never seen a tubercular calf here, bovine tuberculosis being a rare disease in this part of India, and most of the calves, though very poor in condition, are healthy and free from disease, though in the best managed calf farms in India there will always be the risk of an outbreak of rinderpest or foot and mouth disease to dislocate the work, so the Superintendent should keep his new animals separate and be on the lookout to promptly segregate any sporadic case. Having experienced severe outbreaks of both these diseases in my calf sheds I now keep my unvaccinated animals in sheds outside the compound where animal vaccination is carried on. When the calves are purchased, their skins are frequently dirty and scabby and marked with insect bites, but after a few weeks of life in clean stalls with washing and good feeding, they become as soft and fine as a good human skin, specially if the calves are young. Black skinned calves should be avoided, as the results do not show so well and the pigment colours the vaccine. The daily food ration of our calves is—

		Annas	Pice
Paddy straw	4 seers	1	2
Bran	.. 1 seer		8
Linseed oil cake	.. $\frac{1}{2}$ "		11
Total cost		2	9

All the straw is cut into short lengths with a chaff cutter and the oil cake is powdered. The whole is stirred up with a little water in wooden tubs and distributed to the calves morning and evening. New calves often refuse the oil cake but they soon become accustomed to it, and it acts like codliver oil as a fattener. In Europe vaccination calves are generally given milk, which is doubtless their natural food, but I have found that Indian calves do quite well without it. The best calves I have seen were Monsieur Chambon's at Paris. They were all bred from prize Limousin Stock on a special farm. In some European lymph establishments the calves are killed after vaccination and *post-mortem* examinations are made, but with our long period of quarantine and natural freedom from bovine tuberculosis, I do not consider this necessary. Vaccination calves can be used for food. We pay Rs. 6 a calf and sell them for Rs. 2, so the net cost per calf is Rs. 4. As rabbits in their natural condition live underground during the heat and glare of the day, I have had my rabbit house provided with sanitary burrows, made of 9" stone-ware drain pipes with manholes at intervals for entrance and exit. These subterranean retreats are daily

flushed and cleaned. With this provision, the rabbits thrive and breed freely.

3 *The Calf Operation*—There are several good patterns of table. I prefer a hinged one to which the calf is fastened in the upright position, but it is not necessary in India where the calves are so light that they can easily be lifted on to the table and held whilst the straps are fixed. The table should, however, be provided with arrangements for receiving any excreta that may be passed. An operation calf is thoroughly washed the previous evening and transferred to the shed for operated calves. After it is fixed on the table, the abdomen, a portion of the thorax, and the inner surface of the right thigh are shaved and washed with sterile water and thoroughly dried with a sterile towel. Linear scarifications are then made about an inch apart with a scalpel or lancet, and should be just deep enough to cause a slight oozing of lymph, but no bleeding. A watch glass of glycerinated vaccine that has been kept in an ice box at a temperature of 5° to 7° C for a month or more is placed on a stool covered with a clean towel on the right of the operator, and the vaccine is taken up with a blunt lancet or small ivory paper knife and lightly rubbed in. It is convenient to make three or four long scarifications before applying the vaccine, but with a slow operator it is best to apply it to each scarification as it is made. When the operation is finished, the calf is removed from the table, cleaned and provided with a wooden collar to prevent licking, and a clean cotton cover tied with tapes over the vaccinated surface, after which he is returned to the vaccinifer stalls.

4 *The removal of the vaccine*—The time at which the vaccine is taken is a most important consideration, the object being to get a sufficient quantity of material of full potency with a minimum number of extraneous organisms. Vesiculation, though slight, is fairly continuous after 72 hours. After 96 hours the vesicles, though small, are fairly developed and continuous and give good results if the lymph is taken. They may be said to be at their best at 120 hours. After this, though the vaccine is potent for at least a couple more days, the vesicular ridges lose their clean cut appearance, and the vaccine taken contains considerably more micro-organisms. So 120 hours is generally taken as the best time for taking the vaccine. The calf is fixed on the table and the surface of the abdomen, including the vesicular ridges, is thoroughly cleaned with sterile cotton wool and warm water and dried with a soft sterile napkin. Gauze sponges are used for this at the Lamb's Conduit Street Calf Depot in London, and are very convenient. It facilitates the cleaning to spread a wet towel over the surface for a few minutes to soften any adherent crusts and scabs, which should be scrupulously removed. The vesicular ridges should then be even rather than beady and have

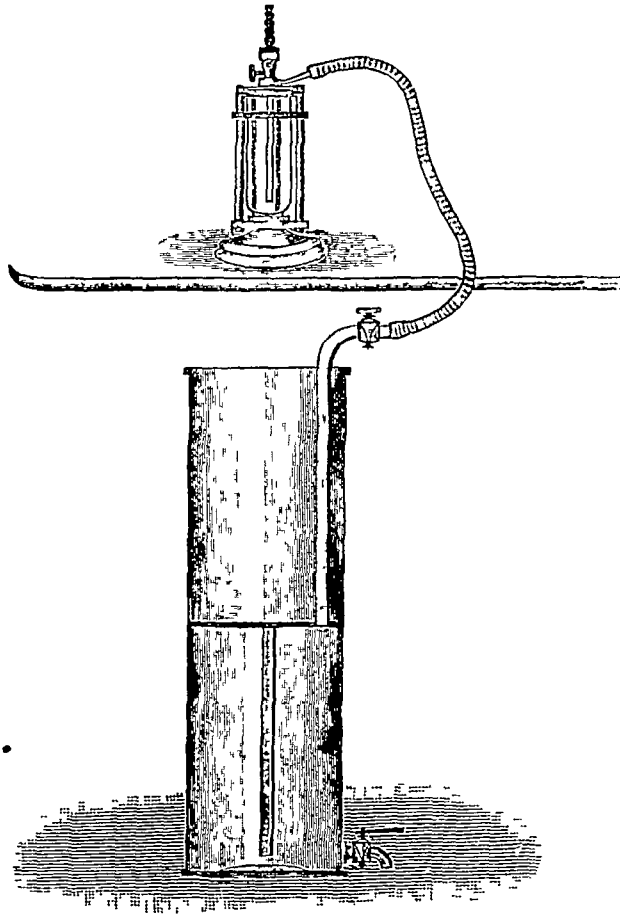
a translucent appearance. The pulp is removed by a single firm scrape with a Volkmann's spoon and deposited in a glass scale pan. If any portion of a scarification has not taken well, no vaccine should be taken from it. The scraped surfaces are dried with blotting paper and dusted with a powder of oxide of zinc, starch and boric acid, the calf is returned to the outside byre pending removal, and the vaccine pulp is taken into the laboratory and preparation room.

5 *The preparation of glycerinated vaccine*—The pulp is first weighed. It is a mistake to try and get too much out of one calf as we cannot increase the output beyond a certain point without loss of quality. With the small calves procurable in Calcutta we find that a good calf yields from 150 to 200 or in some cases up to 300 grains, whilst a poor calf only gives from 75 to 100. The requisite amount of glycerine and distilled water is measured out. I use four parts of glycerine mixed with 50 per cent distilled water to one of pulp. At the Lister Institute rather a higher dilution is used, the amount being varied according to the appearance of the vesicles in the calf, the best vesicles being able to stand a dilution of one in six. The pulp is served gradually into the conical receiver of a triturating machine and glycerine and water added a little at a time. It should be passed through the machine four times to get it in as fine a state of division as possible. It should be received in a glass mortar as it drops from the triturating machine, and if it does not look sufficiently homogeneous, the triturating may be completed with a pestle. I use the triturating machine adopted in the Government Lymph Laboratories and supplied by Messrs. Baud and Tatlock with a marble-topped table, glass case, and either electric-motor or foot-crank for driving. It has the advantage that it can be easily taken to pieces and sterilized by boiling after use.

6 *Climatic difficulties*—Even in England difficulties are experienced in summer, for in the Local Government Board Report for 1899-1900 we read—"During these summer months the hot dry weather experienced acted prejudicially on the lymph, and this in two ways. Firstly, the glycerinated lymph despatched to public vaccinators was liable on its receipt to be exposed to high temperatures. Secondly, the hot weather acted detrimentally on the production of vesicles on the calves themselves. In such conditions the vesicles tend to run a very rapid course and become dry, crusty and aborted, and thus the yields of lymph are small in quantity and of variable quality." India is said to afford every variety of climate. My own experience of it is that it principally varies between dry heat and moist heat, and that they are both prejudicial to good calf vaccination. To some extent I got over the difficulty of preserving the vaccine by the use of an ice box and despatching the day's supply

THE CULTIVATION AND PRESERVATION
OF CALF LYMPH

PAUL NIELD COOK, D.P.H.,
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to the vaccinators in the early morning by means of a bicycle orderly, who brought back any that was left over on the previous day. My recommendation for electric punkahs for my calves to mitigate the effects of the heat was dismissed with an official smile. I have now introduced a system which, I believe, will obviate all the difficulties of the hot season. It has been shown by Blaxall and Friemlin that vaccine is rendered inert by exposure to a temperature of 57.5°C , for five minutes or 37°C ($98.6^{\circ}\text{Fahrenheit}$), for twenty-four hours, but that it will stand a temperature of -180°C , the temperature of liquid air, for several weeks without deterioration and can be kept for a year or more in cold storage at a temperature of a few degrees below zero centigrade without any loss of potency, though kept at 10°C , the approximate temperature of an ice box, it loses its vaccinal activity to an uncertain but appreciable extent. So, after my return to India at Christmas, I obtained sanction for an additional calf shed, collected 60 calves and prepared enough glycerinated vaccine to last until the next cold weather. This vaccine is poured into test-tubes nearly up to the rim, sterilized corks are pushed in so as to squeeze out a little vaccine and thoroughly waxed over, as vaccine keeps best in bulk and in the absence of air. The test-tubes are put up in tin cases, which are again sealed up and put away in a tin box with a perforated tray, which is stored in the Linde Ice Company's cold storage, at a temperature of about -5°C . The tube of lymph is taken out of cold storage as required, kept in an ice box, tested on rabbits, transferred to large capillary vaccine tubes and issued for use, and the services of most of the calf coolies have been dispensed with till the next cold weather. I believe that this procedure entirely solves the climatic difficulties of animal vaccination in a large town like Calcutta, where cold storage is available, and that in districts where there is no cold storage, it will be found necessary to have small cold storage chambers for keeping vaccine, serums and other medical requirements that are liable to deteriorate through exposure to heat.

7 Filling and sealing Tubes—Some time ago I got out the apparatus used in the Government Lymph Laboratories for filling large glass vaccine tubes, but it was laid on one side as we had not sufficient pressure of water to work it in the usual way by means of a water force pump, and an alternative method of getting the necessary air-pressure did not occur to me. During my absence on leave, the apparatus designed by Major Enticam, IMS, was tried, but did not prove satisfactory. I have now got a gasometer made by Messrs Incell and Silk (see Diagram) $2'6''$ in height and $9''$ in diameter, which goes under the bench and is connected with the apparatus by a rubber pipe, and the arrangement works perfectly. All that is re-

quired is to fill the gasometer with water occasionally. My men say they can fill 400 tubes an hour and the lymph is all the time in a closed and covered glass receptacle and not exposed to contamination by floating micro-organisms or such as come from the breath or person of the filler. As one man fills the tubes, another seals them in a small Bunsen flame. I recently read in a book on the ancient and royal game of golf, the truism that there are more ways than one of hitting a ball, and I can say with equal truth, that there are more ways than one of performing the simple operation of sealing a vaccine tube, and that the adoption of a good method is a matter of no small importance. The method I advocate is as follows. Pick up the filled tube with the finger and thumb of the left hand which should just cover the contained vaccine, pass the tube from the finger and thumb to the end once through the flame to drive off most of the air, hold the end (not quite the end, just sufficient being left to grip) in the flame, and as it fuses, draw it out with a pair of forceps held in the right hand and twist it off. In passing the end through the flame, if the filler does not burn his finger and thumb, he will not injure the vaccine. If the twist is not made, a small hole may be left through which oozing may occur.

8 The uses of the Rabbit—It was shown by the French Vaccine Commission, 1903—

(1) That the efficacy of a vaccine solely depends on the number of virulent elements it contains.

(2) That a rabbit is the animal not only for the regeneration of poor vaccines, but even for research to test the value of vaccine crops.

From these premises Monsieur Guérin, Chief of the Laboratory of the Pasteur Institute at Lille, worked out a system for testing vaccines, which was published in the *Annals of the Pasteur Institute*, April 1905. Stated briefly, if the back of a rabbit be carefully shaved and vaccine of good quality rubbed over the skin, a confluent eruption results. If the vaccine be sufficiently diluted, a discrete eruption is the result, the number of vesicles being dependent on the number of virulent elements in a measured quantity of the dilution, just as in making plate cultures of microbes the number of colonies obtained varies with the degree of dilution, each separate microbe giving rise to a visible colony. The vesicles appear about the third day and the estimation should be made then. The order of procedure is thus described—

"Entire vaccine vesicles are collected from calves. After being kept for 10 days at a low temperature in their own weight of sterile glycerine, they are triturated and their own weight of glycerine is added a second time. The final proportion of the latter is then 2 parts to one of vaccine pulp. With such a

preparation we prepare the following dilutions in distilled water

1 Gram of the glycerinated vaccine pulp	+ 10 c c of water, dilution	1/10
1 c c of this glycerinated dilution	+ 4 c c of water, dilution	1/50
1 c c of this glycerinated dilution	+ 9 c c of water, dilution	1/100
1 c c of the dilution of	1/100 + 4 c c of water	1/500
1 c c of the dilution of	1/100 + 9 c c of water	1/1000

The shaved backs of rabbits are inoculated with 1 c c of each of these dilutions previously strained through fine silk. If the crop of vaccine is of excellent quality, the eruption produced by the dilution of 1/500 is still confluent. The eruption determined by the dilution of 1/1000 is formed of isolated vesicles 3 or 4 to the square centimetre of inoculated skin. More extreme dilutions give too restricted a number of vesicles to obtain precise indications. Every crop of vaccine of which a particular dilution gives rise on the back of a rabbit to a growth of 3 or 4 discrete vesicles to the square centimetre has a specific virulence represented by the number corresponding to this dilution. The numbers range from 0 to 20, the figures 0, 5, 10, 15, and 20 corresponding to the 5 dilutions which served for the experiments.

All vaccines coming below 5 should be rejected. In practice it is sufficient to examine the dilutions 1/100, 1/500, and 1/1000. As a precautionary measure 2 rabbits should be vaccinated with each dilution."

I did a number of experiments on this system and found that if great attention is paid to every detail, fairly uniform results can be obtained. I was pleased to find that the Calcutta Corporation stock would stand the test of the extreme dilution of 1/1000. I hold that if an experienced vaccinator knows his stock, he can judge sufficiently well from the naked eye appearances of the vesicular ridges in the fifth day calf if the lymph is retaining its potency unimpaired, or if it shows any sign of degeneration, and that this elaborate process is therefore unnecessary. I consider, however, that it is of value in testing a new stock and in selecting a stock for perpetuation, where there are a number of strains to choose from. Far more important in my opinion is the use of the rabbit to regenerate a vaccine, and as soon as any sign of deterioration appears, I use it for this purpose. For this it does not matter what quantity of vaccine is used, and it is unnecessary to make special dilutions. Trouble is sometimes experienced by an extraordinarily rapid growth of hair after the back has been shaved and inoculated, and in this case, instead of shaving, a depilatory of 20 to 40 per cent sodium sulphate can be used if the back is thoroughly washed after its use to get rid of all traces of the depilatory. The third use of the rabbit is to test whether the lymph is alright before issuing it, and I employ it for this purpose in connection with

my cold storage system. Life is too short, however, for the elaborate tests which I have described, and all that we do is to make two or three very light scratches on the fine skin lining the interior of a young rabbit's ear and apply a small quantity of the vaccine. If it is of good quality, after three days fine vesicles will be obtained. I am of opinion that the rabbit is a valuable addition to a lymph depôt, and that no institution for the preparation of vaccine can afford to slight his claims to admission.

9 *The selection and preservation of stock*—

A good strain of vaccine is the first requisite for a lymph depôt. Some of the best European establishments have started their stock by vaccinating young calves with variolous matter from a case of small-pox in the human subject, and Col W G King successfully carried out this transfer in Madras. But it is a troublesome and uncertain process, and in my opinion quite unnecessary when a good stock can be obtained from one of the established depôts. I have obtained lymph from Paris and London that gave excellent results in India, and am at present working with a strain obtained from the Local Government Board Laboratory more than a year ago. I brought out a fresh strain at Christmas but found it inferior to that in use which had been worked up from time to time by passages through the rabbit. It is best to have it carried in the cold storage of the ship, though I have got successful results when this precaution had been omitted. In our Calcutta depôt if a calf shows exceptionally good results, all the vaccine obtained from it is kept for calf vaccination. It is kept in an ice box and not used for three weeks when most of the extraneous organisms have disappeared. This stock is then used for all the calf vaccinations for about six weeks, and if it begins to show any sign of deterioration, it is passed through a rabbit. A calf can stand more vaccination with a lymph thus freed from micro-organisms than it can with a freshly prepared lymph. The vesicles are better and there is less constitutional disturbance. If a stock is rapidly passed through a succession of calves, it soon begins to deteriorate, especially when the climatic conditions are unfavourable, so it is best to continue using the same stock so long as its potency is unimpaired. Pulp may be taken from a rabbit on the fourth day. I think, it is best to kill on chloroform the rabbit, scrape the confluent vesicles and mix the pulp thus obtained with diluted glycerine in the usual way and use this glycerinated rabbit vaccine for the vaccination of calves. If necessary, it may be passed more than once through rabbits. It is not necessary to vaccinate the whole area of a calf with rabbit vaccine if the quantity obtained is limited. It will be sufficient to transplant it to the shaved inner surface of the thigh which will yield ample to vaccinate a calf or two all over the abdomen. I consider the

use of humanized lymph to renovate a stock to be bad practice, and I have not had to resort to it since I adopted my present system

10 *Book-keeping and records*—When calf is vaccinated, its number, sex, age, description, condition, date of operation, lymph used, number of scarifications, weight of pulp collected, date of collection, amount of glycerinated lymph prepared, and number of tubes filled are all entered in a book. A second book is kept to show the distribution of the lymph, to whom sent, date of despatch, number of tubes, date of collection, and calf number. Every case of lymph stored is also ticketed with the calf number and date of collection. So if any unfavourable report is made about any vaccine that has been sent out, it is easy to ascertain the source of the lymph and the results obtained with the same material by other operators and so fix the responsibility.

11 *Rival Vaccines*—There are three methods of preserving vaccine employed in India, namely, the lanoline, glycerine and chloroform processes, and there has been a certain amount of controversy as to which is the best, for each has its advocates. Lanolated vaccine has the reputation of retaining its potency under unfavourable climatic conditions, and being on that account a good kind for general use in district work, though bacterially it compares unfavourably with glycerinated and chloroformed vaccine, and I have found that cocci may multiply in it after it is made. Vaccinators do not generally like it as it is less easy to work with than the others. The chloroform process is a rapid method of destroying bacterial impurities, and so has a distinct value in a hot climate where ice is not available as it can be issued for use almost as soon as it is made. I have been informed that it prevents bad aims as the results of vaccination when buffalo calves are used, from which I conclude that buffaloes have a particularly vicious variety of coccus growing in their integument, as the orange, cition and white varieties usually found in freshly made calf vaccine do not as a rule appear to cause any markedly bad effects. The chloroform process is also useful where a large quantity of vaccine has to be sent out to meet an emergency, and there is no time for the glycerine to obtain its full bactericidal effect. However, I have tested the chloroform and glycerine processes by dividing the pulp taken from a calf into two equal parts and preparing one part on each method and testing the results obtained. Though I obtained excellent results with chloroformed vaccine, I found it less reliable than glycerinated, and other experimenters have arrived at the same conclusion. It is possible that so powerful a germicide as chloroform may have rather too much effect on the cytocytes *vaccinæ*, besides killing the extraneous organisms. My own individual preference is for glycerinated vaccine, though I hold that any

of these vaccines will be good if the lymph is properly cultivated, and it is possible that the different preparations may suit different local conditions.

COLOPTOSIS AND ITS TREATMENT

By CLAYTON LANE, M.D. (LOND.),

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ATTENTION is evidently being directed in England to the prevalence of Glenard's disease, or ptosis of the abdominal viscera. The intention of what follows is to show that this is a disease which is not uncommon in India among Europeans, and consequently one which, being newly recognized, and not obtrusive in its signs, is likely to be overlooked unless the possibility of its presence is constantly kept in mind, and to publish the results of a new operative procedure for that grade of the affection which may be called coloptosis. The anatomy of ptosis of the abdominal viscera has been exhaustively dealt with by Keith, and Watson Cheyne has more recently considered the matter from the clinical standpoint. Both of these articles will well repay perusal. It is recognized that the state is one in which all the abdominal viscera may be implicated to a great and marked extent, or on the other hand one in which the brunt of the trouble may fall on one viscus only, and that there are many cases which lie between these extremes. Except as part of a general abdominal ptosis, I have not met with any marked degree of hepato-ptosis, and do not propose to say anything on the peculiarity except to point out from personal experience the usefulness of the Röntgen rays in the diagnosis of the condition, by the possibility they afford of accurately defining the upper limit of the liver and so determining whether the lower edge is low on account of enlargement or of dropping of the organ.

Movable kidney is recognized as a fairly common anatomical condition, but in all such cases it is unwise to focus the attention on the kidney. It is rather essential, as will be evident presently, to recognize that its mobility may be part of a general ptosis of the abdominal viscera, or that at least there is good evidence to suppose that it is frequently associated with a ptosis of the colon, and that the failure to relieve symptoms by the operation of nephrouphly in certain cases, may be due to the fact that these were caused, at all events in part, by the condition of the bowel, a condition which will not be in any way remedied by the ordinary operation for fixation of the kidney. Another point which it is advisable to emphasize before passing to details is the marked association between visceral ptosis and a neurasthenic, or neurotic condition, which is well illustrated in the cases to be detailed, and which we may parallel with the recognized observation that in performing

laparotomy with local anæsthesia of the abdominal wall, no pain is experienced on cutting the bowel, but that pain is marked when the mesentery is in any way dragged upon. In a visceral ptosis the nerves in the abnormal mesentery are liable to be put on the stretch, in the case of the colon particularly when it is loaded, and the more or less constant pain and nervous reflexes so produced are probably quite sufficient to fully explain the neurotic condition of the individual affected.

The first case which attracted my attention to the condition was that of an unmarried Scotch girl, aged 29, who had been in India nine months before she came under observation in 1904. She stated that her trouble began a year earlier while she was dragging a perambulator up some steps, when she felt something snap in her right side. Since then she had had a dragging pain in the abdomen, easier in the recumbent attitude, aggravated when she moved about, and so severe on one occasion that she had had to give up work. Pain had been accompanied by nausea, but not by actual vomiting. For the same period she had experienced alternate constipation and diarrhoea. When first seen on 5th April 1904 she was suffering from abdominal pain, a tender elongated mass was felt in the right iliac region, she had a pulmonic systolic murmur, but no other physical abnormality, except that her temperature was $100^{\circ} 2'$. It did not, however, again touch 100° till after the operation, but showed a constant tendency to vary from 97° in the morning to 99° or over in the evening. She was kept in bed and on a liquid diet and treated with aperients. Five days later the pain and tenderness were considerably less, on deep pressure an elongated tender mass, apparently as large as the little finger, could be felt running parallel to and two inches above Poupart's ligament. She had constantly to have sedatives at night, being unable to sleep on account of pain. When this condition had persisted without improvement for another fortnight, it was decided to open the abdomen in the expectation of finding an adherent appendix. The peritoneal cavity was opened on the 26th April by a 3-inch incision over the swelling. The appendix appeared to be quite normal. The ascending colon contained, in spite of regular purging, a residuum of faeces sticking to the mucous membrane, and exactly corresponding in position to the elongated finger-like body felt before opening the abdomen. The ascending mesocolon was so lax that the colon could readily be drawn out of the wound. The kidney was not palpated. The incision was enlarged upward and backwards to the middle of the ilio-costal space, and the colon was raised as high as possible and sutured in that position to the posterior abdominal wall. She made a good recovery, and after being fitted with a belt having a low pad supporting the scar, left the hospital free from pain five weeks after the operation.

The second case was that of a Eurasian male 32 years of age, who had suffered for some months from pain and tenderness in the right side of the abdomen. He was habitually constipated. He was under daily observation and aperient treatment in hospital for about four months before operation. His temperature was variable, often showing a range of 3° in 24 hours, 100° being the maximum. There was nothing to be detected beyond tenderness and pain to the right of the umbilicus. As he showed no improvement, the abdomen was, on 19th January 1905, opened for 3 inches by a muscle-splitting operation over the usual site of the appendix. This was found to be thin, pale and free from adhesions. In the lower part of the ascending colon small lumps of faeces could be felt through the walls and adherent to them. On tracing the colon towards the anus by drawing it out of the wound it was found not to pass up to a fixed flexure under the liver, but to have a long mesentery and finally to take a course towards the left hypochondrium. The wound was enlarged upwards and outwards towards the loin, and the presence of a long ascending mesocolon and the absence of a hepatic flexure were verified. The right kidney was freely movable. By two sutures uniting the external longitudinal band of the colon to the parietal peritoneum at the back of the abdomen the caecum was raised and anchored to the upper angle of the wound, which was then closed, partly by interrupted and partly by continuous removable sutures. He made a good and uneventful recovery.

The third case was that of a European woman, aged 30, who had had a first attack of severe pain in the right side of the abdomen, especially in the right iliac fossa in 1902. She had a second attack in May 1903, and a third in August 1904. With each attack she had fever and vomiting but no diarrhoea. The attacks were preceded by constipation. She had a last attack beginning about a fortnight before coming under observation in January 1905 with nausea, headache and abdominal pain, the latter general but greater on the right side. She stated that at the beginning of the attack the legs were drawn up, there was tenderness in the abdomen, the bowels were confined, and that there was fever. When seen there was no abdominal distension, but there was tenderness all over the right side of the abdomen with fullness in the lower part as compared to the left side. No other abnormality was detected. On her being kept in bed and treated with liquid diet and enemata, the tenderness diminished, and it was possible to make out a thickening beginning an inch in front of and below the anterior superior spine of the right ileum and reaching along the crest to the loin. It was tender, but so was all the rest of the right side of the abdomen up to the rib-margin. Her temperature had touched 99° every evening and the bowels had not been opened properly by

enemata. Under a course of aperients the temperature did not again rise above normal till after the operation, and all the thickening disappeared, but the tenderness in the right side of the abdomen, especially in the lower part, remained as acute as heretofore. A definite opinion was expressed that the condition found at operation would be an ascending colon with a long mesentery, and such proved to be the case. The abdomen was opened on 14th February 1905 by a 3-inch incision and a muscle-splitting operation. There was no sign of peritonitis, old or recent. The colon presented and was followed towards the lower end of the wound in what appeared to be the direction of the cæcum, but after pulling out about a foot of ascending colon attached to a long mesentery, it was found to pass across the abdomen towards the spleen. It was replaced, and the cæcum was found in the other direction and delivered. The appendix contained a little fluid which was readily pushed into the cæcum. It was not thickened nor enlarged and was entirely free from adhesions. The operation was completed as in the other cases. The temperature rose to 101.8° on the third day, but then fell to normal and remained so. The wound healed by first intention. One of the removable sutures broke when it was being taken out, the material having been too weak, so that it remained as a buried suture. She made an uninterrupted recovery and left the hospital about six weeks after operation.

These three individuals were all definitely neurotic, both in appearance and from the fact that they experienced considerable tenderness in the right side of the abdomen with very little apparent reason. This, with a thickening in the right side of the abdomen, a slight rise in temperature, constipation which it was difficult to relieve, and the fact that even after constant purging the ascending colon was not emptied of faecal matter, were the features which distinguished them. With the abdomen open, the long ascending mesocolon associated with a movable kidney, in two cases out of three an apparently perfectly normal appendix, and no sign of former peritonitis, in spite of attacks which might be taken as affording good evidence of former appendicitis, and the presence of faeces attached to the wall of the ascending colon in spite of constant regular and repeated purging, were the salient phenomena.

The treatment by operation was first undertaken in the belief that the condition revealed would be one of adhesions surrounding a diseased appendix. When the appendix was found to all appearances normal, with no evidence of past inflammation, this explanation was rejected, for I am unable to persuade myself, as some believe, that the appendix, alone of all organs, has any monopoly of immunity from the effects of repeated inflammations. Finding present the definite condition of "coloptosis

dextra," as one may call it, it appeared evident that if operation were capable of affording any relief at all, it could only be by rectifying the dropping of the bowel and by anchoring it in the corrected position. This was effected by passing two sutures through the external longitudinal band of the ascending colon and attaching this to the peritoneum of the abdominal wall as high as possible, the incision having been first extended upwards into the loin.

The method of closure of the abdominal wound merits detailed consideration, for the wound is necessarily a very large one, and upon the accuracy of apposition of the layers and the soundness of its healing, depends the ability of the scar to resist stretching in the future. After the abdomen has been opened by the muscle-splitting operation over the appendix and the condition of coloptosis has been found, the incision is carried up and out, by splitting the fibres of the external oblique and by cutting across those of the internal oblique and transversalis muscles, until the wound is carried high up towards the ribs in the loin. In order to get good union of this big muscular wound, it is essential to suture it in layers, and since a buried suture in the abdominal wall so often comes away either early or late, necessitating the opening up of the scar and the consequent weakening of the abdominal wall, it is manifestly better to use a suture which accurately adjusts the layers and is yet removable. The simplest form of this, and one which is satisfactory if the precautions to be presently noted are taken, is an ordinary continuous coil-screw suture. The turns must not be too sharp, or they will be difficult to pull out, nor too long or in the intervals of the turns the muscles will not be brought into apposition, a point which is at once obvious as soon as the ends of the suture are pulled upon. The material must be silk, and stout silk, for the strain during removal is considerable with a long and deep suture. Silkworm gut is not satisfactory because the lymph bathing it does not make it pliable as is the case when it is soaked in water, and it consequently becomes brittle and breaks off when an attempt is made to remove it. The silk which is to remain temporarily buried must not on any account be allowed to touch the skin of the operator, of his assistant, or of the patient. It is probably inevitable that at most times of the year in India, however carefully the skin is sterilized at the beginning of a long operation, perspiration washes bacteria out of the sweat ducts during its course, and interferes with perfect surgical cleanliness. Such bacteria, if free in the fluids of the wound, are likely to fall victims to the leucocytes, especially if they have been weakened by antiseptic irrigation, but if they have been squeezed into the recesses of the silk and the phagocytes have to follow them thither, the chances of victory are on the side of the bacteria, and not of the

leucocytes. The difficulty then is not to sterilize silk before an operation, but to keep it sterile during the operation, and, seeing that however carefully one may select silk, it will occasionally snap when being removed, it is essential that there be no chance of contamination in what would become in that case a buried suture. This extreme care of buried silk is, it is scarcely necessary to say, practised by those surgeons in England who are the most particular, and for the reasons just given it is doubly necessary in this country. Silk may be buried in the peritoneum without anxiety, but this is not the case in muscle unless these extreme precautions are taken.

The method of tying the sutures is of some importance. When the peritoneal suture has been passed from end to end of the incision in that membrane, its two ends are brought out through muscle and skin well clear of the ends of the skin incision, and the wound is douched with a $\frac{1}{1000}$ solution of perchloride of mercury. Similarly the edges of the cut surfaces of the internal oblique and transversalis muscles are brought together by a continuous silk suture whose ends also are brought out about half-an-inch from those of the suture joining the peritoneum. The adjoining ends of these two sutures are now tied together over a piece of drainage tube about a quarter of an inch in diameter. If this precaution is not taken, owing to the considerable strain on these deep sutures, they will cut through the skin, and the ends will disappear into the subcutaneous tissue, and some difficulty may be experienced in finding the knots when the time comes to remove them. In the same way, after again flushing the wound, the edges of the external oblique and its aponeurosis are brought together by another continuous silk suture, the ends of which are brought out in the same way. After another flushing, the skin is brought together by a silkworm gut suture. The objection made above to its use as a buried suture does not hold good here, for it can be cut and removed piecemeal. These last two sutures are tied together at the corresponding ends just as are the two deeper sutures. Should the internal oblique have been split in the early part of the operation, this rent will have been mended at the appropriate time by a continuous silk suture, but since there is no part to which to tie it, the ends, after being brought out through the skin, are tied to two separate sutures of silkworm gut passed through the skin close to where the ends of the continuous suture appear, the knot being again over a piece of drainage tube. In this way the different layers of the abdominal wall are brought together by means of sutures which can nearly always be removed. It is still possible, however, that blood may accumulate between the layers and so weaken the wound and scar. This is avoided by a procedure which actually has to be carried out before the insertion of any of the

other sutures. It consists in the passing of a few interrupted silkworm gut sutures through the entire thickness of the abdominal wall. They are passed first and tied last, and bring all the layers into contact, and they must be cut and removed before the continuous sutures. The whole procedure of suturing is fairly rapidly carried out, much more so probably than the description suggests. It is only by scrupulous attention to the prevention of contamination that sutures can be safely buried, and if such care is not habitually used, the result is a series of surgical messes, to which the perpetrator appears to become hardened with a fatalism, of which it is kindest to say that it must be born of the air of the country.

The first dressing must be carried out with equal care, for no chance of infection of the sutures must be allowed, should one of them snap and be left behind. If they have originally been good and not too thin, they usually come out with quite surprising ease. An abdominal belt with a properly adjusted pad was carefully fitted to each of these patients.

The latest news I have of them is that the first is in good health, and a sick nurse in England, a work which is notoriously heavy. The second was seen by an informant quite recently, he was reported to me as "looking and expressing himself as feeling extremely well." The third is still much troubled with pain, though better than she was. This is the only case in which the appendix was not empty and it is likely that it should have been removed in addition to suspending the colon.

In two of these individuals the condition has been altered from that of a neurotic person in constant discomfort and incapable of work, to that of a useful and happy member of society, by an operation the effect of which is to raise and steady the cæcum, and in the third amelioration has taken place.

So far as I am aware, the operation of raising and fixing the lower end of the ascending colon has not been previously performed, nor has any operation procedure directed to the fixing of the colon only in these cases been even suggested. Watson Cheyne, in the article referred to above, dealing with cases of general visceral ptosis in which hepatoptosis was the central feature, describes how he has set about obtaining a firm adhesion between the liver and diaphragm by sponging the upper surface of the former with pure carbolic acid, and by inserting large sutures into the upper surface of the liver, thus anchoring it to the diaphragm, and by then fixing the edge of the liver to the peritoneum and muscle of the abdominal wall along the greater part of the free edge of the viscus. He also attached the hepatic flexure of the colon and the pylorus to the under-surface of the liver. In his cases the operation on the colon was part of a very extensive one for a very extensive visceral ptosis, and the ascending colon was

fixed at its upper end. In the cases just described the ptosis was limited to the colon and kidney of the right side, the colon was raised and fixed at its lower end, and this procedure and its means of attainment comprised the whole of the operation. Both methods of dealing with the colon would appear to be efficacious. Watson Cheyne reports that one of his cases complained after the operation of discomfort and dragging pain on the left side of the abdomen especially when and after the bowels acted, a pain which he referred to the loose descending colon and left kidney, and he thought that these might require subsequent suturing.

This last case leads naturally to the consideration of left coloptosis as a trouble requiring treatment.

It has been seen that when right coloptosis is present, the symptoms have a close resemblance to those of appendicitis. The following case, in which there is good evidence to believe that the troublesome symptoms were caused by left coloptosis, illustrates the fact, which is mentioned by Watson Cheyne, that hæmaturia may be due to that condition. A European male, aged 36, who was much run down, began in 1904 to experience attacks of colicky pain in the left loin and iliac region running down as far as the left testis. They were definitely associated with constipation, were very wearing, were accompanied by nausea and eructation, and on one occasion by hæmaturia. No stone was passed, though all the urine was seen, there were no symptoms referable to stone in the bladder nor urethra. Both kidneys could at times be felt, and the sigmoid flexure was really palpable if it contained feces. The condition disappeared when the bowels were kept regularly open. These pains can even now be made to re-appear at will by allowing the bowels to become confined, and can be removed by an aperient. This individual had about ten years previously two attacks which were supposed to be due to appendicitis, and which cleared up with purgatives. It is reasonable to conclude that he has double coloptosis as well as double nephroptosis, that the right-sided coloptosis produced the appendicular symptoms, and that on the left side when the sigmoid flexure is loaded, it drags on the descending colon, and through the mesentery of this, on the kidney, pulling this down and causing its congestion by tension on, and partial obstruction of, the renal vein.

In milder cases, then, of coloptosis, the regulation of the bowels is sufficient to keep the individual in comfort and health, but in those who do not respond to this treatment, and whose life is a burden, the performance of a colostomy offers a means of relief which is very satisfactory, so far as the evidence goes.

A fourth case has more recently come under my care. She had, what was considered by another medical man, to be a typical attack of appendicitis, and I was asked to operate

during the quiescent period. The ascending colon had a long mesentery, the appendix contained some fluid, but was not congested nor adherent. It was removed and her condition under the anæsthetic was so unsatisfactory that the enlargement of the wound and subsequent colopaxy were not attempted. She did well and has enjoyed good health since the operation was performed.

These severe cases, revealing a condition of coloptosis on opening the abdomen, raise two questions. The first is that probably there are milder cases which are curable without operation, and there appears little doubt that this is the case. There are quite a number of instances in which the symptoms enumerated above are present in a minor degree, pyrexia, however, being absent, and in which the regular use of aperients removes the troublesome symptoms. As examples may be mentioned that noted above and associated with hæmaturia. A second is that of a married woman from Madras with constant pain in the left side of the abdomen, neurasthenic and weak. There was also uteroptosis, with cervical catarrh and "erosion" of the cervix. She had worn a pessary for some time. Regular purgation with tonics and local treatment for the endocervicitis made her an entirely different woman. The second point raised is as to whether there is any connection between coloptosis and appendicitis. In two instances the appendix contained palpable contents and if this is taken as a criterion of appendicitis, it will be probably found, with further experience, that there is a bond between the two, possibly that racial tendency towards the establishment of an ascending mesocolon has contributed mechanically towards the modern incidence of appendicitis among Europeans. While fully recognizing that the operative treatment of these cases is still in the experimental stage and that it would have been advisable, if possible, to collect more evidence before publishing results, it will be a matter of years before one can expect to establish the procedure on a firm basis with one's own experience alone, and results of the operation having proved, on the whole, so satisfactory, it appears fair to appeal for a more extended trial in the practice of others. I have no doubt that the material is present in fair abundance among Europeans in India.

A PLEA FOR A MORE GENERAL USE OF DESMARRE'S EYELID RETRACTOR IN CATARACT EXTRACTION

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My reason for writing on this subject is not only its importance but its entire absence in the text-books on ophthalmology. In all of them we are advised to keep the eye-speculum in the eye till the completion of the operation. One

or two authors merely mention the usefulness of Desmarre's retractor as an alternative measure to the eye-speculum in certain special cases, giving it a position of secondary importance. In this article I hope to show to my readers that Desmarre's retractor should be used in nearly every cataract operation, and in some cases to the entire exclusion of the ordinary eye-speculum.

I have now almost discarded this continual use of the eye-speculum after having tried many varieties of it. It was my practice, formerly, to leave the speculum in the eye till the operation was completed, relying on my assistant to keep it well elevated after the corneal incision was down, but even with this precaution, I observed cases, in which after completion of the corneal incision, the lens presented itself at the wound, threatening to come out, and at times did come out, with a copious escape of vitreous. These are the cases which try the eye-surgeon to his utmost, for he must be calm yet deliberate and quick in his actions. What does he do in such cases? He at once stops the operation, seizes the speculum, unscrews it, and in his desire to extract it as speedily as he can, he often unintentionally presses it on the eye-ball with a still further escape of vitreous, and the chances are that, he starts to unscrew it the wrong way. All these movements, one so quickly following the other, call for great calmness and dexterity on the part of the surgeon, and moreover occupy some considerable time, during which, the patient, who is by now greatly unnerved, does his utmost to oppose the surgeon by forcibly contracting his eyelids, and thereby increasing the escape of vitreous and destroying any remaining chances of vision. Such were the cases that made me look upon the ordinary eye-speculum as a more or less dangerous instrument, and I decided to use a Desmarre's retractor in its stead. What I now do is the following, be the operation an ordinary capsule-laceration, or an intra-capsular one. An ordinary eye-speculum is at first inserted, and I take great care that it is properly adjusted, for I maintain that an ill-fitting speculum, or one that has not been accurately inserted, pinching up the lids as it were, is the immediate cause of a considerable amount of discomfort to the patient, and productive of unnecessary nervousness and uneasiness on his part, causing him to bring his orbicularis palpebrarum muscle into violent and uncontrollable action, resenting the presence of the instrument and being the cause of many of our vitreous escapes. (Fluidity of the vitreous and weakness of the suspensory ligament, which are not common, being too often blamed for these mishaps.) I then do my sclero-corneal incision and immediately take out the speculum and DO NOT use it again during the rest of the operation. I then take a Desmarre's eyelid retractor, of which I have

three sizes, suitable for all eyes, insert it under the centre of the upper lid, push it gently home to the upper fornix, or as far as it will go and hand it over to my assistant, who takes a firm steady hold of it with his thumb, index and middle fingers (as if holding a pen), and keeps a steady pull on it, but not too strong. The direction of the pull is of great importance. It should not be directly upwards, lest it comes in the way of the operator and also presses on the eye-ball, neither should the pull be downwards for fear it should slip out, but it should be straight *backwards* and *slightly upwards* following the incline of the patient's forehead. With his other hand (the ball of the thumb) the assistant exercises gentle, yet firm and steady pressure downwards of the lower lid. This pressure is made on the structures from the inferior orbital margin where he can obtain a firm hold, but the skin under the finger must be quite dry, otherwise it slips from the grasp. By this means the eye is as widely opened as any surgeon can desire, much more than is obtained with an eye-speculum, and what is of more importance with less discomfort and pain, and the patient does not resent it. I might here mention that I tried both the retractor and an ordinary eye-speculum on one hundred cataract eyes, reversing the order of insertion, and after a time asked them which instrument was more comfortable and caused least pain and discomfort, nearly all of them said that the eye-speculum caused pain at the outer canthus and that the retractor was more comfortable. In this way the whole of the orbicularis palpebrarum muscle (both its orbital and palpebral parts) is entirely prevented from exerting any pressure whatever on the eye-ball—a point of paramount importance in cataract extraction. The assistant stands, or sits on a high stool, on the same side of the patient as the eye that is being operated upon. He fixes the retractor with his left hand for the right eye and his right hand for the left eye, resting his wrist and forearm on the patient's head and his elbow on the pillow or the head of the operating table. He depresses the lower lid with the ball of the thumb of his right hand for the right eye, and his left hand for the left eye, resting his forearm against the side of the patient and his elbow on the table. It is important for both his elbows to be fixed in case the operation is a lengthy one. For this to be thoroughly done, your assistant must be a trustworthy and reliable man. The retractor is kept in the eye till the operation is completed, when it is taken out in the following manner, *viz.*, the retractor is *first* carefully taken out and then almost at the same time the hold on the lower lid is gradually relaxed. If these steps were reversed and the lower lid released at first (you can try this and you will find), it sets up a spasmodic contraction of the circular fibres of the orbicularis muscle, and it is violently moved up and down in the

hopes of its meeting the upper lid as happens in the normal action of blinking, this invariably starts a similar motion of the upper lid which resents being drawn up by the retractor, the result being that the instrument is pressed on to the eye-ball and so favours an escape of vitreous. This release of the retractor should be very gradually done, in fact, the upper eye-lid in its desire to get rid of the instrument, slowly pushes it downwards, the assistant merely keeping a check on a "too" sudden expulsion by gently opposing the action of the upper lid. If these details are observed, no pressure is brought to bear on the eye-ball, in fact, the retractor scarcely, if at all, touches it.

To some of my readers this minute entering into details may perhaps sound too elementary a theme to mention and my grave critics may regard it as a presumption on my part, but I can assure them that it is in ophthalmic surgery more so than in any other branch of surgery, that the success, and by this I mean the maximum amount of success, of your case depends to a very large extent on the surgeon's individual attention to details, no matter how trivial they may appear.

Formerly I used Desmarre's retractor only in cases which presented the following characteristics, viz. —

(1) Nervous and excitable men and women who, no matter how carefully and thoroughly you had previously tutored them, lose all control of themselves the moment they are on the operation table, or when you attempt to insert the eye-speculum, strongly resent its introduction, as evidenced by a violent spasmodic contraction of the orbicularis muscle. It is in these cases that the ordinary eye-speculum should never be used not even to perform the corneal incision, for if there be any degree of increased intra-ocular tension and this spasmodic contraction is kept up (and they are quite incapable of stopping it), out comes the lens in many cases, due to no effort on the part of the surgeon, with a copious escape of vitreous at times.

(2) When the palpebral opening is abnormally small, due in most cases to a cicatricial contraction of the outer canthus (in these cases I slit up the outer canthus beforehand).

(3) When the eye-ball evidences any degree of increased intra-ocular tension, no matter how slight it be. But even excluding these three types of cases I often experienced escapes of vitreous, some of them quite unaccountable, for it must be remembered that our percentage of vitreous escapes depends to a large extent on the behaviour of the patient, the more excitable he is, the more likely is there a loss of vitreous and vice versa, moreover, one must be mindful of the fact that many patients who are quite calm at first lose all or the greater part of their control immediately the nidectomy is performed. It was the realization of this

fact that influenced me to give up the continual use of the eye-speculum till the operation was completed and to substitute it with a Desmarre's retractor.

In the first type of cases I, now, do NOT use the eye-speculum in ANY part of the operation, but a retractor from beginning to end. At one time I did use a strabismus hook as advocated by Major Smith, but I gave it up for these reasons, viz., the point of it is so narrow and when pulled on *in situ*, presses into one particular spot of the upper eyelid, causing some discomfort and pain to the patient, also your hold on the lid is not uniform and spread over such a large area of the under surface of the upper lid, as is obtained by using Desmarre's retractor. I admit that the strabismus hook has a firmer hold on the lid than a retractor. It will be of interest to know that before using the retractor my vitreous escapes, in all cases, without any selection whatever, average from 7 to 9%, and that since I have used the retractor as described here, my escapes have reduced to nearly 2%, and in my last 67 cases of ordinary capsule-laceration extraction, in which I used the retractor, I have not had a single escape of vitreous. This may not signify much, but I believe in the saying "Every little helps," and I feel confident that if other eye-surgeons gave this a trial, they will materially reduce their vitreous escapes. If they do not feel disposed to use the retractor as a routine practice, I would urge them to resort to it in the types of cases I have mentioned. It may appear rather awkward to the surgeon and the assistant at first, but after a little experience this disappears. In my opinion the advantages a Desmarre's retractor possesses over the ordinary eye-speculum are as tabulated below —

"EYE SPECULUM" "DESMARRE'S LID RETRACTOR"

- | | |
|---|--|
| (1) Large & somewhat clumsy instrument | (1) Not so |
| (2) Does not efficiently control or prevent spasmodic contractions of the orbicularis palpebrarum muscle | (2) Does, aided with depression of the lower eyelid |
| (3) Sometimes in the way of the operator, especially some of the specimens of speculums supplied to hospitals | (3) Out of the surgeon's way. |
| (4) Does not help to keep the eye lashes of the upper lid out of the way | (4) Does to a greater extent (although my routine practice in cataract extractions is to cut the upper eye lashes as closely as I possibly can, this prevents any instruments touching them) |
| (5) The raising and lowering of the upper lid when necessary cannot be executed when once the speculum is fixed | (5) Can be easily done |
| (6) Causes pressure on the eye ball when the orbicularis is put into violent action | (6) Causes no pressure what ever, in fact does not touch it if properly adjusted |
| (7) Causes in many cases a great deal of pain and discomfort to the patient, making him nervous and uneasy | (7) Causes little or no pain or discomfort comparatively speaking |
| (8) The lids cannot be opened very widely without pain | (8) Opened as widely as the surgeon desires |

" EYE SPECULUM "

(9) Takes some time to extract during which procedure great harm might, and is often done to the eye ball with vitreous escaping in profusion (This I consider its most serious drawback)

(10) In cases of necessity it is most difficult to replace when once extracted, without producing a further copious escape of vitreous by pressing on the eye ball

" DESMARRE'S LID RETRACTOR "

(9) Most easily taken out on the slightest appearance of vitreous in the corneal wound (This advantage is invaluable in intracapsular operations when, owing to a difficulty in taking out an ordinary speculum you often convert what might be a trivial escape of vitreous in an enormous one and thereby lose all chances of vision)

(10) Easily reinserted

To those surgeons who are not inclined to use the retractor as a routine practice I would suggest a trial in the following cases —

(1) When there is any degree of increased intra-ocular tension

(2) In narrowing of the palpebral opening with cicatricial contraction of the canthi

(3) In nervous and excitable people who resent the entrance of a speculum and have no control of their orbicularis muscles

(4) In children and adults

(5) In operating for glaucoma, *i.e.*, when performing a big basal iridectomy, for in such cases the retractor is a great advantage over the ordinary eye-speculum—it must be remembered that the moment the corneal incision is made and the aqueous has escaped, the pent up and tense vitreous seeks relief, and in doing so it pushes both the lens and the iris forwards into the anterior chamber, these two last named structures being joined as it were against one another, add to this a spasmodically contracting orbicularis muscle pressing the speculum on the eye-ball and the chances are much against the surgeon picking up the iris with his forceps without unintentionally wounding the anterior capsule of the lens and starting either an anterior polar cataract or so, tearing the anterior capsule, as to allow an entrance of the aqueous into the lens substance, and so producing a traumatic cataract (It would be a most interesting point to know how often one wounds the anterior capsule in performing iridectomies. It is my belief that this accident happens more often than is admitted)

(6) In eyes in which the cornea is abnormally small and difficulty is bound to be experienced in extracting the cataract—generally with escape of vitreous, for it must be remembered that in these eyes although the cornea is small, the lens is not developed proportionally with it, but is usually of normal size, requiring extreme care in its extraction, and necessitating a rather large corneal incision (Priestly Smith says, that such eyes are more liable to glaucoma)

In conclusion, I would particularly urge eye-surgeons to give Desmarre's retractor a trial, for in this instrument we have one that is not only

more efficacious, but is also easy of manipulation, and the use of which is fraught with less danger to the eye than the ordinary eye-speculum which is so universally used

ARTHRITIS IN DYSENTERY

By C BRODRIBB, B.S. (Lond.),

CAPTAIN, I.M.S.

THE following case, which occurred in a sepoy of this regiment, appears to be of sufficient interest from a diagnostic point of view to deserve reporting

Sepoy Bholoi was admitted to hospital on the 26th of October last suffering from dysentery, passing some twenty motions a day, consisting of blood and mucus, this rapidly cleared up under strict treatment with sulphate of soda every hour, so that on the 30th he passed two normal motions. This was a very prevalent type of dysentery in the regiment at the time. He was discharged on the 2nd November to a week's "excuse duty"

He returned to hospital on the 4th November, to say that the bowel condition was quite well, but that his right knee had suddenly become swollen in the night, this he maintained was not the result of any injury, but had come on by itself without practically any pain. On examination he was found to have acute hydrops of the right knee which, though full of fluid, appeared to be neither painful nor tender, there were no symptoms nor history as shown by his medical history sheet of any venereal disease. It was thought at the time that the condition was probably an acute traumatic synovitis in which the history was being concealed.

The joint was placed at rest and its condition remained about the same during the next ten days, during which time his temperature on three occasions rose to 100° in the evening.

On the 14th November the left knee suddenly filled with fluid, while the patient was in bed, again apparently without pain, from this date the patient had fever every evening, his temperature rising at night to about 100° and falling to sub-normal in the morning.

Gradually the condition of the original (right) knee changed all signs of fluid disappeared, the knee, however, remained as large as ever, indeed it came to look exactly like a tuberculous joint, that is, swollen, partially fixed, semiflexed, and without signs of fluid or inflammation, and on the 24th the right knee which contained no fluid measured 16 inches as compared with the left knee which was full of fluid and measured only 14 1/2 inches.

The muscles of the right thigh showed some wasting, no signs of disease could be found in the chest, on three occasions the patient had attacks of epistaxis.

Extensions were placed on the limbs and films, and capsules of blood sent for examination, the

serum, however, failed, to agglutinate either Malta fever or enteric. The left knee was aspirated and I found to contain clear straw-like fluid which on cultivation failed to reveal any organism.

During the first half of December the left knee followed the course taken by the right leaving the knee free of fluid, but swollen and semiflexed, the evening rise of temperature still continuing.

During the last half of December the evening fever gradually disappeared, leaving the patient with two semiflexed and semiflexed joints.

During January active disease as indicated by the temperature chart having appeared to have come to an end, the patient was put on to massage and passive movement, with the result that now (February 23rd), he has practically recovered the entire use of both limbs.

In the absence of any other cause the above would appear to be a case of acute arthritis characterized by a very plastic effusion, the results of dysentery.

A Mirror of Hospital Practice.

THE RADICAL CURE OF HYDROCELE, BY INCISION AND EVERSION OF THE SAC

BY LAWRENCE G. HINK, M.B., C.M. (Edin.),

Civil Surgeon, Meigui, Burma

FROM May to December 1905, this operation was performed by me 21 times and twice by my Hospital Assistant, Mg Me Nyo. In my Annual Report for 1905 on the Civil Hospital, Meigui, I wrote as follows —

In looking over past Annual Reports I have been unable to find that this operation by the total eversion of the sac has been performed by any surgeon in the Province. I am aware, however, that during 1905, apparently for the first time in Burma, the operation has been done by a few others, and, such being the case, I record my experience in detail and the methods adopted by me. The 23 cases operated on were for the majority cominghee coolies, ranging from 26 to 48 years of age. Three of these had been previously tapped several times and one of these three was operated on about 15 days after being tapped and tincture iodine injected. In nine cases the sac was thickened and adherent to the adjacent tissues, in three cases the sac was thin, but adherent, and in the remainder the sac was normal. In six cases the patients had suffered from venereal disease and had thickened and adherent sacs, with disease of testicle. The size of the tumour varied from that of a big orange to that of a foot-ball. The largest was a one-sided hydrocele, the scrotum hanging down to within about six inches of the knees. The contents of the sac varied from 8 to 96 ounces of fluid.

All the operations were performed under chloroform anaesthesia and took from 8 to 15

minutes, according to the size of the tumour and the condition of the sac. An incision is made through the scrotal tissues down to the fibrous layer. If the tumour is small, it is then dissected by means of the finger until the mass is free from the cellular layer, especially posteriorly. It is then lifted out of the scrotum. The sac is then incised longitudinally, the water let out and the sac everted. The secreting surface thus becomes external. The sac is then fixed by one or two sutures to the fascia of the cord. The everted sac and testicle are then replaced in the scrotum and the external wound sutured. If the tumour is of any great size, I find it more convenient, after the sac has been reached, to puncture it and let out all the fluid. The sac is then dissected away from the scrotal tissues and everted, the rest of the operation being the same as in the other method. The advantage of this latter method is that a smaller skin incision is required, but, in small uncomplicated cases, the dissection is more easily done when the sac is distended than when the sac is collapsed after the fluid has been let out. I have also found that, instead of fixing the everted sac to the tissues of the cord, it is preferable to form a loose collar round the cord by stitching the cut edges of the sac. Usually one suture in front and one behind the cord is all that is required. The external wound is generally healed in four or five days and the patient able to go about. Some pain, not usually severe, may be felt for 24 hours, but after this, patients are usually quite comfortable. In all cases a painless enlargement of the testicle usually results, but this subsides in from ten days to one month. The temperature is usually normal throughout, except perhaps the first day or two, when the evening temperature may reach 101° F. There is usually no hæmorrhage, so that ligatures are not required. Patients can usually leave hospital in a week or ten days.

In one case operated on 15 days after the injection by a private native practitioner of tincture iodine, the sac was found much thickened and very friable. It was with much difficulty separated and everted. The result was excellent. Notwithstanding this good result, I am inclined to think that in long standing hydroceles with very greatly thickened sac, partial resection of the tunic should be resorted to. I think this also should be done in cases where, on account of syphilis, the cord and testicle are badly diseased. I regret to have to record a failure, but from this I have learnt a valuable lesson and one which may prove useful to others. The patient was a thin, weakly, cominghee cooly, said to be 48 years of age, but about 55 years by appearance.

When his sac was opened his testicle was found very diseased and the cord felt soft and gelatinous. The sac was everted and fixed to the cord. Apparently the circulation was interfered with, the tissues of the sac necrosed, general blood poisoning set in, the man became

deeply jaundiced and eventually died. Subsequently to operation I learned that the man was syphilitic. Old age, syphilis and a debilitated constitution should make one cautious, and in similar cases, after ascertaining the state of the cord and the testicle, I should prefer to do a partial excision of the sac. None of the cases operated on by me have so far showed any signs of recurrence. From the fact that the tunica vaginalis must become attached to the surrounding structures and the cavity formed by the sac is thus permanently obliterated, a recurrence of the condition would appear to be an impossibility. The advantages of this method over all others may be stated thus—

(1) The operation is simple and safe. Tapping with or without injection may be even simpler, but in cases complicated by hernia much mischief may result, whereas by opening the sac one sees exactly the true state of affairs and can act accordingly.

(2) The operation causes very little pain and subsequent inconvenience. Tapping with injection of iodine is a cruel procedure compared with this operation.

(3) There is practically no hæmorrhage. In total or even partial excision there is usually some hæmorrhage.

(4) It is the simplest and surest of all radical cures. Since writing the above remarks which refer to the work done in 1905, I have this year performed five more similar operations and all have been perfectly successful. In uncomplicated cases the operation is so simple that I have no hesitation in allowing my Burman Hospital Assistant, Mg Me Nyo, to operate in my presence. As already stated, he has done two such operations and both were successful. One of these was specially interesting as the patient was a man about 50 years of age and was suffering from elephantiasis of the lower limbs. The scrotal tissues were somewhat thickened and the sac presented white patches as in leucoderma. The sac was easily everted and the external wound healed without any trouble.

At the present time I find, from the scanty literature at my disposal, that there are six different methods of treatment employed with a view to effecting a radical cure. They are (1) acupuncture (for infantile hydrocele), (2) tapping and injecting with irritating substances, such as Ti iodine or carbolic acid, (3) antiseptic incision, (4) incision, with partial excision of the sac, (5) incision with eversion of the tunica vaginalis testis, (6) Lawrence's operation, by tapping and introduction of sterile catgut. Professor Orville Horwitz, Jefferson Medical College, has, in a very excellent article, published in the *Therapeutic Gazette* for April 1901, pages 237-241, drawn attention to the various methods in vogue and decides in favour of that by eversion of the sac. As regards tapping and injection of irritating substances he says—"In the majority of the cases when the Ti iodine was employed the ter-

mination was extremely unsatisfactory. Its use was usually attended by a prolonged convalescence, the patient often being confined to his bed from ten to fifteen days, in many cases two or three months elapsed before the surgeon knew definitely whether or not a cure would be effected. Immediately after the injection of either Ti iodine or carbolic acid the sac became enormously distended and was usually attended with a great deal of pain. In many cases relapses occurred. Jacobson states that "in 25 cases so treated at St. Thomas's Hospital recurrence took place in 18." Of 19 cases treated by Bardeleben, but 65 per cent were cured. Jacobson estimates the recurrence in our climate (America) to be about 10 per cent. In my experience this is rather a low estimate. Extensive œdema of the scrotal tissues has been reported following the escape of either Ti iodine or carbolic acid into the structures. Suppuration of the sac, abscess of the testicles and carbolic acid poisoning have all been noted. In one case, treated by means of carbolic acid injection, abscess of the testicle followed, involving the cord, giving rise to lymphangitis, death finally taking place from sepsis. The only thing which commends tapping and injecting a hydrocele sac is the fact that it is readily and rapidly performed. The objections to tapping and injecting for hydrocele are so numerous that most surgeons now resort to the open operation, it is far safer and less painful, with quicker convalescence and a diminished liability to recurrence."

As tapping and injection of iodine is extensively practised in Burma, especially by Hospital Assistants, I have fully quoted the remarks made by Professor Horwitz and would add that the danger involved when the injection is given in cases in which a hydrocele is complicated by scrotal hernia, and the latter not diagnosed, is very great. I am in hopes that the injection method will in time be abandoned as unsurgical, and that the open method will be universally adopted. Tait (*Annals of Surgery*, March 1901, quoted in the *Therapeutic Gazette*, August 1901, page 550) remarks that the essentials of a radical cure of hydrocele are, that it shall be devoid of danger, prevent recurrences and finally that it shall permit the patient to resume his ordinary business in the briefest possible time. Treatment by the injection of irritating fluids with the purpose of producing adhesive inflammation between the layers of the serosa, described by English and American authors as a radical method, he considers unsurgical, and that nothing less in accord with modern expeditious and clean technique could be imagined.

As regards partial incision of the tunica vaginalis, Tait states, that it has proved useless. Total incision of the serosa, he says, is too severe for most cases.

Before Doyne in 1895 and subsequently Winkleman in 1898 published their descriptions

of the method by incision and eversion (or as Doyne called it "inversion") of the sac, the method which uniformly gave the best results was, when the sac was partially resected. This operation, says Prof. Horwitz, required an anæsthetic, took some time to perform, the operation frequently being prolonged in order to give attention to controlling the annoying hæmorrhage that supervened. About nine days was required for convalescence, after which there was no certainty that a recurrence would not take place. He adds—"The profession is therefore still in a position to adopt with cordiality any new method of treating this affection that will take less time in its performance, that will be attended with less pain, and be followed by a greater certainty of radical cure. It is believed that an operation (Doyne's and Winkleman's) which fulfils these indications has at last been devised and is so simple that the wonder is, that it had not been thought of before." The operation has been also recommended by T. Hope Lewis, House Surgeon, Auckland Hospital, New Zealand, and by Tait. As I have only recently subscribed to the *Indian Medical Gazette*, I do not know whether any contributions on the subject have been published by Indian surgeons. The disease being very prevalent in most parts of India and Burma, there is no lack of opportunity.

"A simple method for the radical cure of hydrocele" is published in the *Yale Medical Journal* (quoted in *Therapeutic Gazette*, 1906, page 441) by Lawrence. He advocates as a safe and nearly painless operation, the introduction into the hydrocele sac of an aseptic, absorbable solid substance. The ideal substance is sterile catgut. The hydrocele is tapped with a small trocar under local anæsthesia, the fluid is thoroughly evacuated and through the canula is pushed 9 or 10 inches of a No. 2 or 3 sterile catgut. The canula is then withdrawn and the opening is sealed with collodion or adhesive plaster. Thereafter for twelve hours the patient is kept quiet. There results a painless reaction. The author states that a ten years' experience with this method has resulted in a permanent cure for every case, this often after repeated failures from iodine treatment. In four to six weeks the scrotum resumes a normal appearance. For more recent cases, 9 inches of No. 2 catgut is used, for old chronic cases with thickened sac walls, 12 inches of No. 3. Of course, in double hydrocele or one of the multilocular variety each sac must be drained and have its separate piece of catgut inserted. I have no experience of this method.

Tapping the hydrocele and injection of Adrenalin was tried by me in one case, but resulted in failure, the sac refilling after a few days.

Before concluding this article I desire to refer to the after-treatment of one of the cases operated on by me in 1906. The usual operation was performed in an uncomplicated case, the sac

was everted and the external wound closed. It then occurred to me to try the effect of Antiphlogistine locally applied, with a view to soothing any pain and reducing the inflammatory congestion. A sample package, supplied to me during my recent visit to England, was used for this purpose. The patient was operated on in the morning. At about 4 P.M., he said he had slight pain in the part. The Antiphlogistine was heated and applied as hot as he could bear on the entire scrotum. It was laid on about $\frac{1}{4}$ inch thick, quickly covered with a thick layer of cotton wool which was held in place by a small antiseptic towel. The next morning the patient stated that the application was still comfortably warm, that the pain had been entirely relieved and that he had slept splendidly. The application was then changed and he had no pain all day. Another fresh application was made in the evening and removed the following morning. The result of these three applications at intervals of 16 to 8 hours (4 P.M. to 8 A.M. to 4 P.M. to 8 A.M.) was, that the patient had no pain, slept well, there was hardly any swelling of the scrotum and the wound healed soundly in four or five days. The temperature was normal throughout. The patient made an excellent recovery and stated that all the time he was in hospital he had not enough pain to even suggest that he had been operated on. Antiphlogistine is said to be composed of chemically pure glycerine, boric acid, salicylic acid, non-carbonate, peppermint, gaultheria, eucalyptus and iodine, combined with the base, dehydrated silicate of alumina and magnesia. It is recommended as an external application for inflammation and congestion, as a perfectly harmless soft and pliable, non-irritating, non-toxic, soothing and antiseptic poultice and surgical dressing, possessing hygroscopic and anodyne properties. It was used by me to test to anodyne, hygroscopic and antiseptic properties, and I was much pleased with the result in the case referred to. I have also found it a soothing, cleansing, antiseptic application to foul ulcers. It reduces the surrounding inflammation and cleans up the ulcer. It is a very useful clean local application, keeps warm from 12 to 24 hours, and is easily removed when cool.

The majority of the cases operated on in 1905 have been traced this year. In not a single case has recurrence taken place and the enlarged testicle has become normal in size. The scrotal incision is hardly visible.

[This operation has been performed by surgeons in India for many years past. It is often called "Pratt's operation," because many years ago Lt.-Col. J. J. Pratt, F.R.S., described it in these columns. It is probable that as regards hydrocele (as in several other matters), the opinions of surgeons in India are of far more value than of those in Europe, because of the extreme prevalence of hydrocele in India and the extraordinary size these tumours may obtain to in this country. Correspondence is invited.—ED., I.M.G.]

A CASE OF TRAUMATIC FEMORAL ANEURISM

By E OWEN THURSTON, F.R.C.S.,

CAPTAIN, I.M.S.

PRAYAG, Hindu, male, blacksmith, æt 40, was admitted into the Medical College Hospital, Calcutta, on March 23rd, 1906. About two months before admission he was beating a piece of red hot iron with a hammer weighing about 10 lbs, a splinter about the size of a pea flew off and struck him in the right groin at a spot two inches below Poupart's ligament over the line of femoral artery, there was severe hæmorrhage roughly estimated as about a pint and a half, the blood spouting out to a distance of a foot. He did not know whether the piece of iron came out or not. The bleeding was arrested by his friends with pressure and a bandage and he was sent home in a "gari." There was slight oozing of blood for a day and the external wound was healed after four days and he then returned to his work, which consisted of lifting weights averaging 5—10 seers and working a pair of bellows. A small amount of swelling of the thigh persisted with slight pain and stiffness at the site of the injury. Twelve days before admission while working he felt pain in the thigh which began to swell, this was at 3 P.M., he had done the usual amount of work that day, no extra exertion, after the onset of these symptoms, he walked home about two miles after which there was severe pain and the swelling rapidly increased so that after 48 hours the right thigh was one and a half times the size of the left. He could not now get up from his bed and was treated by rubbing the thigh with turpentine. The swelling remained about the same size until three days before admission when there was a further sudden increase. During this time there was no fever or sign of inflammation in the swelling.

On admission the patient was anæmic with anxious care-worn expression, breathing somewhat rapidly and in obviously bad condition and complained of lancinating pain in the right thigh with swelling.

There was a large pulsating fusiform swelling in the upper part of the right thigh with a discoloured area about the size of an 8-anna bit over the line of the artery. The thigh was flexed, but could be nearly fully extended. The swelling extended some 8—9 inches down the thigh from Poupart's ligament, it was forcibly pulsating with a very marked thrill and systolic bruit and on placing the fingers on the discoloured area, the blood could be felt racing along beneath it, the skin having been so much thinned that it felt as if it must give way every minute.

The right thigh 4 inches below the anterior superior spine measured 21 circumferentially as compared with 12 inches of the left, this measurement was taken at the level of the original

wound. No pulse could be felt in the posterior tibial.

Extra peritoneal ligature of the external iliac artery was performed about the middle, a single silk ligature was applied, the coats of the artery being divided, after the division of the muscles, it was found that the aneurism extended 1—2 inches above Poupart's ligament and externally to the level of the anterior superior spine. The wound was sutured in layers, the time occupied in the operation being 18 minutes. The leg was wrapped up in wool with a flannel bandage. After the operation the pain was greatly relieved.

On the 24th there was little pain, the leg was warm and the swelling less, being 20 inches over the bandage and dressings, the swelling now extended to within 7 inches of the upper border of the patella. The discoloured area of skin was more nearly normal and firm clot could be felt beneath it. The temperature was 101°. In the evening the lower part of the leg and the foot were found to be cold and the skin shrunken.

On the 25th the temperature at its highest was 100.6, and the pain was less. Tactile sensation was dulled over the foot and the lower third of the leg, and these parts were also cold. The lower part of the aneurism was softer and semi-fluctuating and it was also softer beneath the discoloured area of skin, the swelling on the posterior aspect of the thigh was distinctly less.

On the 27th the gangrene had extended to the middle of the leg. The wound was dressed and was aseptic with the exception of a trace of pus about one stitch. The aneurism was aspirated from the outer side of the thigh and a small quantity of blood withdrawn, about 2—3 oz drained away afterwards. In the afternoon he began coughing with foetid expectoration and his condition became much worse, the pulse being feeble and quick and he had some sweating. Saline per rectum was given with strychnine and digitalis, and some slight improvement was obtained.

On the 30th there was no extension of gangrene, the foot only was cold, the leg feeling warm again, some superficial blisters appeared at the upper part of the leg. The circumference of the thigh was 18 inches. The expectoration and fever continued, and in addition there was diarrhoea. No very definite signs were found in the chest.

By April 1st the gangrene was up to the level of the seat of election, the leg being cold and dry, the skin over the blebs were separating, but the gangrene was not of the moist septic variety. The wound was dressed, and it had healed by first intention.

From this date he gradually failed, the diarrhoea and expectoration continuing and could not be checked, he took any form of nourishment badly and finally died on April 4th from

exhaustion, the chief factor causing this termination being the bronchitis. No post-mortem examination was allowed.

This case must be considered as distinctly uncommon, in the first place, the formation of a circumscribed traumatic aneurism in an artery, the size of the femoral, more particularly when it is not enclosed in an unyielding structure such as Hunter's Canal is distinctly rare, to say nothing of the fact that he escaped with his life at the time of the accident without skilled assistance, and it was unfortunate that he did not seek surgical aid at or soon after the diffusion of the aneurism. If he had been seen then, the treatment would undoubtedly have been the so-called old operation or operation of Antyllis, as it was, his condition was so bad that if it had been attempted, he would have certainly died on the table. I decided to take the risk of the almost certain onset of gangrene in preference to this. With this view Captain J. J. Urwin, M.S., entirely agreed, and I must express my thanks to him for his opinion and also for his assistance at the operation and for the care he took of the patient during my absence from the hospital. The extension of the aneurism above Poupart's ligament would also have rendered difficult or impossible any compression of the iliac artery, and in fact the condition of the patient was so bad and the skin over the aneurism so nearly giving way that anything like a prolonged operation was out of the question.

The gangrene had, I think, little or nothing to do with the patient's death, the cause being the bronchitis and the diarrhoea with the consequent exhaustion and upon which no treatment had any avail. The variety of gangrene which followed was also unusual, being of the dry type, although from the size of the aneurism there must have been very considerable interference with the venous return.

NOTES OF A SUCCESSFUL OVARIOTOMY

By EDWARD BALM,

Civil Surgeon, Aurangabad

Kaloo bhai, æt 35, inhabitant of Paindagaon, was admitted into the hospital on the evening of the 24th of December for an abdominal enlargement.

History—The patient states that about 5 years ago she had an abortion. Since then her monthly course had been irregular. A few months after the abortion she noticed a growth in the left side of her abdomen, which began to increase in size gradually till it attained the present size—owing to which she experiences difficulty of breathing and is unable to attend to her domestic work.

Previous History—She bore three children. Two of them died while infants and the last, a girl of 7, is living.

Present Condition—The abdomen is very much enlarged (measurement not taken) and the enlargement bulges more to the left and is quite fixed.

The enlargement begins above from the ensiform cartilage down to the pubis below. On the left side it extends to the margin of the tenth rib—on the right side on a level with the last rib.

The abdominal veins are not distended, the umbilicus not pouched out, there is no œdema of feet and ankles.

Change of posture does not alter the shape of the swelling.

On palpation very little fluctuation is elicited. On percussion there is dullness throughout. The heart, liver, kidneys and spleen are normal.

Diagnosis—A large ovarian tumour of the left side bound by adhesions.

26th December 1906—The operation of ovariotomy having been decided on the previous day, the patient was given a bath at 10 A.M. today. Her clothes, bed-sheets, etc., were sterilized personally by me. The instruments, towels and silk were also sterilized. The different lotions were also prepared.

An enema of turpentine was given at 8-30 A.M. The patient was allowed a pint of milk half an hour before (8 A.M.).

After the patient had a bath, a piece of antiseptic gauze was placed on the abdomen and held by a binder.

Before placing the patient on the operating table her bladder was relieved by a catheter.

The operation began at 3 P.M. She was put under chloroform and the abdominal wall dissected. An incision about $3\frac{1}{2}$ inches in length extending from a little above the umbilicus to the pubis below was made. After the bleeding was controlled by pressure forceps, a careful dissection was made till the peritoneum was exposed which was divided on a director. After this proceeding I tried to pass my fingers around the cyst to feel for adhesions but found it impossible as there was no room to work upon. I then protected the abdomen and margins of the wound by sterilized towels for fear of allowing the cystic fluid enter the peritoneal cavity (I had no Spencer Wells trocar and canula and have written to Messrs Kemp & Co for one since then) and thrust the two curved trocars and canulæ in Down Brothers' capital case, into two different places of the cyst. The task of emptying was a tedious one owing to the thickness of the fluid and smallness of canulæ. After removing about six pints of the fluid I removed the canulæ and had the cyst held at these places by two pairs of vulsellum forceps. The cyst was then drawn out and was found to be adherent to the omentum (the omental vessels were dilated abnormally and violent pulsating), the adhesions were ligatured and divided.

On delivery of the cyst it was found to be connected with the left broad ligament and uterus. The pedicle was ligatured in two halves with double silk and another ligature applied across while the part of the uterus attached to the pedicle was divided and secured by rows of silk ligatures. No blood to speak of was lost.

Finally the peritoneal cavity was sponged out and the edges of the peritoneum and skin were brought together by silk sutures with a few superficial horse-hair ones.

The wound was dressed with iodoform and double cyanide of mercury gauze held in place by a binder.

At 4-30 P.M. the operation ended.

Nature of growth—Multilocular ovarian cyst springing from the broad ligament and uterus—adherent to the omentum.

PROGRESS AND TREATMENT

26th December—Patient complains of no pain or discomfort whatsoever after operation.

Nurse directed to draw urine every 6th hour and to allow 2 oz. of milk every 4th hour after 12 hours.

At 6 P.M. $\frac{1}{8}$ gr. of morphia was given hypodermically.

She vomited twice bile and mucus (10 and 11 P.M.).

At 12 P.M. I took her temperature, which was 98°, and as she was feeling sick, I gave her $\frac{1}{8}$ gr. of morphia hypodermically.

27th December—Temperature, morning and evening, normal (98°). Had sound sleep till break of day.

The milk that was allowed at 8 A.M. was vomited at 8-30 with a large quantity of bile.

At 9 A.M. another hypodermic injection of morphia was given.

28th December—Morning temperature normal, no pain or distension.

Her menses began at 2 P.M. and the evening temperature rose to 100°.

Patient retained milk to-day.

29th December—Morning temperature 100°. Evening temperature 100.2°.

Patient complains of stiffness in her back and was rather restless. She was made to lie on her right side when she fell asleep. After two hours she was again made to lie on her back, which position she is keeping till to-day (12th day of operation).

30th December—Morning temperature 99°. Evening temperature 99.6°. Bowels moved. Sago congee allowed.

31st December—Bowels moved. *Menstruation ceased.* Morning and evening temperature 99°.

1st January—Patient allowed a little curry and rice.

Temperature, morning and evening, normal.

The dressing was removed which was not even stained with serum—the same dressing was again used.

2nd January—Temperature normal.

6th January (12th day of operation)—Sutures removed, a piece of antiseptic gauze was applied and strips of sticking plaster applied across.

13th January—Patient discharged from hospital.

TWO CASES OF SUBCRANIAL HÆMORRHAGE

By L. B. SCOTT, M.D., D.I.H.,

CAITANY, I.M.S.,

Civil Surgeon, Silchar.

THE following cases of head injury came within a few days of one another to the Silchar hospital and, I think, are worthy of record as a contrast. The one had a large compound fracture of the skull and typical symptoms of hæmorrhagic compression of the brain and was successfully trephined and cured. The other had no wound, no fracture, and no definite signs of compression, but subcranial hæmorrhage was found *post mortem*.

Case I—A.A., aged 26, was brought into hospital on the evening of January 20th, 1907, unconscious and with several cuts on the head. He was a dâk runner, and with another runner had been attacked by night on the road while carrying the Lushai Hill mails. The men were knocked down unconscious and the mail bags rifled. The down runners found them a little later, one just recovering and the other apparently dead. The latter was brought into Silchar, however, and arrived at the hospital just two days after the accident in the following condition—

He had several cuts on the head, one a large one exposing a fissured fracture of the left parietal bone. Though unconscious, he was not comatose. Any stimulus roused him to movement and to speech. He could swallow milk. There was no paralysis or paresis. He was somewhat restless. His left pupil was a little larger than the right and reacted more feebly to light. His temperature was 99.0. He did not vomit and had not done so.

I saw him after dark and concluded that there was compression of the brain either due to depressed bone or to hæmorrhage. His condition was not bad and was not getting worse, so I decided to operate next morning by daylight if there was no improvement.

Next morning, his condition was just the same. He was therefore given chloroform, and the wound on the head was enlarged and a big flap of scalp turned down from the parietal region. A very long fissured fracture of the frontal and parietal bones was disclosed which oozed blood. A 1-inch trephine was applied over the fracture at the parietal eminence. On removing the piece of bone, clot was found separating the dura-mater from the bone. It was evidently very extensive, and

on scooping it out free hæmorrhage began at once. The blood flowed in a pulsating stream from below and behind the trephine hole, and evidently came from the posterior branch of the middle meningeal. I therefore plugged in the direction of this vessel, and after further reflecting the flap of scalp, trephined again vertically below the parietal eminence and $1\frac{1}{2}$ inch above the zygoma to try and find the posterior branch of the middle meningeal and tie it. No artery could be found, however, nor the bleeding point. Here, too, the dura was displaced by thick clot, and very free hæmorrhage occurred on removing it, making search extremely difficult. I therefore plugged again, and reflecting a flesh flap in the temporal region consisting of skin, fasciæ and temporal muscle, trephined once more $1\frac{1}{2}$ inch behind the external angular process of the frontal bone and $\frac{1}{4}$ inch above the zygoma, to try and find either the trunk of the middle meningeal, or the posterior branch near its origin. Here I was just below the clot, its edge appearing at the top of the trephine hole. Though a clear view of the dura-mater could now be obtained and the trephine hole was enlarged with forceps, no vessel could be seen. I therefore inserted a number of ligatures beneath the dura-mater with a curved needle, and tied a row of them right across the hole in the skull, ligaturing portion of dura and hoping to include the artery. I seemed to have effected my purpose, for on removing the plugging from the other trephine holes, a very small amount of blood welled up. I then inserted a certain amount of plugging soaked in boiled alum solution in the direction of the hæmorrhage, and sutured all the incisions leaving a gauze drain to each of the trephine holes. I did not attempt to replace the portions of bone removed.

The patient made a rapid recovery. He was quite conscious next day. In three days he had recovered his memory of all previous events. On the fifth day he insisted on standing up to salaam when I came to see him. On the sixth day there were a few beads of pus round some of the skin sutures. This rapidly disappeared, and fortunately no suppuration occurred within the skull in the large cavity partly filled with blood clot which remained after the operation. Everything rapidly healed, except one small hole in the parietal region through which the intracranial cavity continued to discharge serous fluid for some weeks.

Now, two months after the operation, the patient is in excellent health and complains only of some noises in the head and difficulty in opening the jaw owing to the damage done to the temporal muscle in the operation. He has a small hole leading a short way into his head through which a very little fluid is discharged.

I have recommended him not to return to dâk running—as an employment, and he is looking for other work.

Case II—I, girl aged 13, was brought to hospital on the afternoon of January 25th, 1907, having been hit with a stick on the head at 6 A.M. the same day. She was unconscious, and was said to have remained so since the blow was inflicted. She could, however, be roused by shouting and even made to answer questions. She moved freely showing no signs of paralysis. The pupils appeared to be equal and reacting equally to light. There was, however, a large coloboma of the left and was irregular. This made it impossible to compare the two pupils with confidence. There was no wound on the head, but the scalp of the left parietal region was slightly contused. There were no signs of fracture of the skull. The temperature was normal.

I saw her in the evening shortly after admission and concluded that she was recovering from concussion. The vomiting and fact that she could be roused and was not becoming comatose especially indicated this. She was given calomel and her head shaved and kept low, covered with cold-water bandages.

Next morning I found her in almost the same condition, but a little more easily roused. She was still vomiting. I very carefully examined the pupils, and though the left seemed to react somewhat less readily than the right, I put this down to the coloboma which rendered a quarter of its circumference non-mobile. In size they were equal as far as could be judged. The temperature was 97°. I considered that though she seemed to be unusually long in coming round from concussion, there were absolutely no indications of compression, such as increasing coma, localizing paralysis or spasms, or inequality of pupils. I thought contusion of the brain was the most likely explanation of the prolonged unconsciousness.

In the evening, 36 hours after the injury, she was in the same condition, but the temperature was 99.4°. There were still no indications whatever for trephining, though the success of the operation in Case I a few days before tempted me to operate.

She died a little later in the evening, quite suddenly, with no alteration in the symptoms.

Post-mortem—There was slight ecchymosis of the scalp in the left front parietal region. There was a large clot in the anterior fossa of the skull about 2 inches in diameter and $\frac{3}{4}$ inch thick separating the dura-mater from the bone and compressing the frontal lobe. The volume of the clot was about equal to that of a hen's egg. It did not invade the middle fossa at all. The bleeding point could not be found. There were signs of recent pneumonia of the left lung, viz., adhesions and infiltration. There were 17 round worms in the small intestine. There was no fracture of the skull or laceration of the brain.

In spite of the absence of signs, therefore, compression had evidently been the cause of the unconsciousness. What was the reason of her sudden death I do not know.

If I had trephined, I should, in the absence of localizing indications, have gone for the anterior branch of the left middle meningeal. I should have opened the middle fossa and found nothing, for there was no clot there. Even ligation of the middle meningeal would have been useless, for this artery supplies no branches to the anterior fossa. The bleeding must have come from the anterior meningeal branch of the internal carotid.

It is satisfactory to think, therefore, that human surgery without divine inspiration as to the site of the blood clot could not have saved this life.

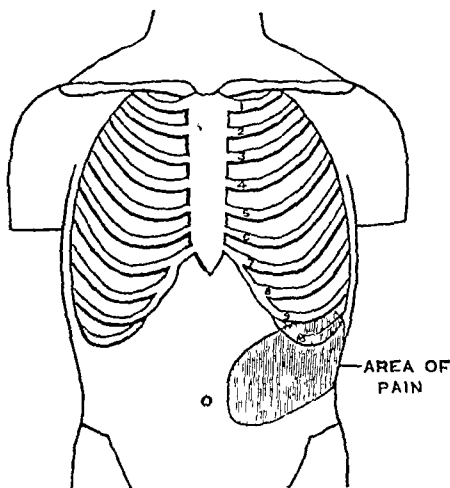
ABDOMINAL PAIN IN PNEUMONIA

BY M. FOSTER REANEY, M.B. (Lond.), D.P.H.,

LIEUTENANT, I.M.S.

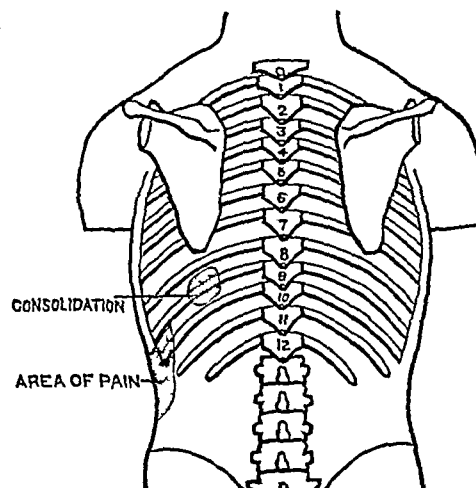
THE following case illustrates an unusual distribution of the pain in pleurisy and pneumonia —

A Hospital Assistant asked me to see a boy, aged 10, who for the previous four or five days had complained of pain in the left lung. He had had a temperature above 100° F. throughout and had been treated with fomentations applied over the abdomen but without effect. On examination, I found that the pain was mainly in the left hypochondrium and that there was slight tenderness on pressure. Nothing could be felt in the abdomen to account for the pain, the spleen was not enlarged, the urine was high coloured but otherwise normal, and the bowels had been opened. The distribution of the pain reminded me of one or two cases of pneumonia with referred pain, which came under my care when



a house physician, and on examining his chest I found well marked signs of consolidation over

an area of about the size of a five-shilling piece, and about two fingers' breadth below the lower angle of the left scapula, *i.e.*, diminished resonance on percussion, increased local resonance and tubular breath sounds, with a few fine crepitations at the end of inspiration. I advised a mixture of the ordinary saline diaphoretics, and glycerine and belladonna and hot fomentations directly over the consolidated area, and if that failed that a couple of leeches should be applied. The latter were not needed as the pain rapidly eased and within an hour or two had



disappeared. His temperature fell by lysis during the sixth and seventh days of his illness and his further progress was uneventful.

Remarks — Pain in pneumonia may be —

A *Lung pain*, *i.e.*, true visceral reflected pain, (*vide* Head in Quain's Dictionary of Medicine.)

B *Pleuritic pain* —

(i) Local, due to implication of the pleura.

(ii) Pain referred to the terminal distribution of an intercostal nerve, in the same way as pain in hip disease may be referred to the knee by the articular branch of the obturator nerve to that joint. In the above case the pain was apparently referred to the terminal distribution of the eighth (and ninth?) intercostal nerve.

The possibility of this type of referred pain is important on account of the liability of a wrong diagnosis being made, particularly in the early stages before the physical signs in the pleura and lung have had time to declare themselves. On the right side a diagnosis of commencing appendicitis might be made, especially as there may be tenderness on pressure. This tenderness is presumably due to the tactile impressions becoming painful ones, owing to their being added to the painful stimuli from the pleura. In this respect this referred pain might be mistaken for true visceral reflected pain of abdominal origin, but the absence of the corresponding anterior and posterior tender areas, which is typical of the latter, should be sufficient to distinguish it.

Indian Medical Gazette.

MAY, 1907

THE PROPOSED BENGAL HOSPITAL FOR THE INSANE

THE following is a brief description of the proposed new hospital for the insane, which is to be built at Ranchi to act as a central asylum or rather hospital for the insane for the province of Bengal. It is well known that the asylums of India have till recent years been much behind the age, and we heartily welcome the new departure involved in the construction of the new large central asylums at Lahore and Agra, and the proposed new hospitals for this class of patient to be erected in Burma and in Bengal.

A new central asylum has been actually built for Bengal, but it is so faulty in design, being merely an enlarged reproduction of the old and obsolete asylum at Behampore, that it was very properly found unsuitable for a central asylum for the province, and will, as soon as the new hospital at Ranchi is ready, be handed over for use as a jail for which it is (somewhat) more suited.

The proposed title for the new asylum at Ranchi is more than a fanciful change of nomenclature—it indicates an advance in the treatment proposed for this unfortunate class of the community, and in the design and plans of the proposed new institution.

This new ideal is entirely in consonance with medical views, and is being acted up to in several countries, *eg*, in Egypt where a new and modern hospital is being built, and at Melbourne where a new hospital for the treatment of the acutely insane is under consideration, or at the new Bangour asylum, erected near Edinburgh, at a cost of £300,000. The fact that the use of the expression hospital instead of asylum will lessen the stigma attached to the latter word is not without benefit.

The new hospital for the insane is intended for a daily average number of from 650 to 700 males and 175 to 200 female patients, and will be so situated and constructed that, as is not improbable, it will be capable of considerable extension in several directions. The area of land taken up is extensive. This is important, because it is fairly certain that a modern well-managed hospital of this kind will lead to a greater

number of patients seeking admission, for no one supposes that the 700 or 800 patients in Bengal asylums at all represents the total number of insane in that vast province, who would be benefited by modern treatment in a modern institution.

The asylum will consist of three quite separate divisions, that for male lunatics, for females and for the criminal insane.

The grand feature of the proposed asylum will be the absence of walls, there will be no stone-walls to make it a prison instead of an insane hospital, and the ample grounds around the cottage and villa wards will reduce to a minimum the feeling of constraint or confinement. The buildings for the criminal insane will necessarily be more like those of a jail, but for the non-criminal all such ideas of restraint will be carefully veiled. This will possibly lead to more escapes, and will necessitate good watch and ward, but this is a necessity if the hospital is to be used for curative purposes and not merely as a place of detention. While on the subject of criminal insanes it is certainly desirable that the real criminal insane, who is a danger to the community should be closely confined and separated entirely from non-criminals affected with mental disease. The really criminal lunatics, with homicidal mania for example, must be rigidly confined within walls, but it is surely a misuse of the expression, "criminal lunatic," to include with homicidal lunatics, such harmless creatures as lunatics charged with such, from our present point of view, trivial offences, as travelling without a railway ticket, house trespass, or petty theft. In one asylum in Bengal almost one-third of the "criminal" lunatics were charged with only trivial offences, and in another asylum we know of a criminal lunatic whose offence consisted in stealing a jack-fruit! Such petty misdemeanours on the part of lunatics should not involve consorting with real criminals in a criminal insane asylum.

Another important point in the construction of the proposed hospital is the classification of the future inmates, and the allowing of sufficient accommodation for each class. We understand that the following classification is proposed and it has the merit of being practical as well as simple.

First of all, there should be observation wards, where patients should spend the first few weeks or months at first in isolated cubicles and

afterwards in small associated wards before being transferred to the other section

Then as a large majority of patients in an asylum are tractable, quiet chronic maniacs, demented, melancholics, epileptics or idiots, special accommodation in large proportion must be provided for this class

Then comes the refractory. This section must be separate from the other sections and must have a lot of separate cubicles, and is intended for the actively insane, troublesome, aggressive, noisy or filthy insanes

Then there is a hospital, which will be, we understand, provided with wards and single rooms for at least 25 per cent of the total population. Separate rooms are needed for tuberculosis cases, for bowel complaint cases, for epileptics and idiots, and for convalescents

Next, last but not least, there must needs be a separate section for recovered cases, and for those on the high road to recovery. It is altogether desirable to keep these improving cases apart from those still insane, for it cannot be doubted that the continued association with the actively insane may and does lead to relapses and to delay in recovery

To run such a big hospital properly, a full experienced and sufficient staff is needed. A better class keeper is needed than the ordinary asylum warder of the present, and the open unwall'd state of this "villa colony" will necessitate a strong staff of warders, possibly in the proportion of one keeper to every six patients—not too large a proportion when head keepers are counted, and night and day duty is necessary

We understand that the plans and estimates for this new Insane Hospital have been sent home for the sanction of the Secretary of State

THE BACTERIAL INDICATORS OF WATER POLLUTION

In the early days of water bacteriology it was hoped that the detection of the organisms of typhoid fever and cholera would become a procedure of practical import and of ready applicability. This hope, it is well known, has not been realized, the difficulties of such investigations having made them practically of little use. At the same time the unreliability of simple enumeration has been demonstrated, so that for the bacteriological examination of water the use of bacterial indicators has come into vogue and has already proved of great value

This subject is very ably discussed in an admirable little book by Dr. Savage, and we propose to briefly lay before our readers the main arguments used by that writer. For fuller details we refer to the book itself*

The object of a bacteriological examination of a water is to ascertain the water is or is not one the use of which would be prejudicial, either at the time of examination or subsequently

It is unanimously agreed that sewage and the excreta of human beings, diseased or healthy, must be looked upon as potential vehicles for disease production. Therefore to detect the presence of such must be the aim of the water bacteriologist

A number of organisms have been selected as fulfilling the requirements necessary for indicators of contamination, these requirements are, the organism should be abundant in the substances for which its presence serves as an indicator, it should be absent, or relatively absent from all other sources, it should be easily isolated and numerically estimated, and its characteristics should be definite and not liable to variation. As an indicator (*qua* indicator) it is unimportant whether the organism is or is not harmful

The bacillus coli is generally accepted as the best indicator of harmful contamination, and Dr. Savage sums up a discussion of this point in the remark that "there is no evidence or observations which have ever shown that bacillus coli reasonably defined is present in any numbers in sources which have not been exposed to some form of faecal contamination." He further gives the following conclusions—

(1) "That bacillus coli is a reliable indicator of excretal contamination. It indicates excretal, but not necessarily human excretal contamination"

(2) "That its value as an indicator of harmful pollution depends both on the completeness of its attributes as compared with the characteristic organism of human excreta, and upon its numerical presence," *i.e.*, the more nearly its characters are in accord with those of the typical excretal bacillus coli, the greater its value and the fewer required to be present to establish evidence of pollution

The streptococci are the next organisms which have been selected as indicators of pollution

* Bacteriological Examination of Water Supplies by Dr. Savage, pp. xvi + 297. Size, 8vo. Price 6s. 6d. nett. H. K. Lewis, London, 1906

Up to the present there are no characteristics known which enable streptococci derived from sewage or feces to be readily differentiated from those derived from other sources, they are abundant in human and many animal excreta, and also in sewage, but are only found in soils and waters which have been polluted. On the whole, Dr Savage concludes that "while the presence of numerous streptococci indicates recent pollution, the evidence connecting streptococci is not so convincing as in the case of bacillus coli," and too much stress also should not be laid on their absence.

The *bacillus enteritidis sporogenes* has been extensively advocated as a test for sewage and excretal pollution. It is a spore-bearing bacillus, and in fact it is the spores which are used for its detection, and it is owing to the prolonged powers of resistance of these spores, that their presence can only show pollution by no means necessarily recent, but rather such pollution may have taken place at some long antecedent period.

Using then these organisms as indicators of pollution, it is found necessary to have some sort of standard to work by, and while arbitrary and inflexible standards must be avoided, it is absolutely necessary to have some kind of guiding standard, and bearing in mind that no bacteriologist should be asked to give an opinion on a water unless full details of its source and surroundings are also given, Dr Savage gives the following as a convenient rough guide or standard for practical working purposes —

A DEEP WATER

(Springs and deep wells)

Gelatine count	not over 50 per cub cent
Bloodheat count	not over 5 to 10 per c c
Excretal b coli	should be absent from 100 c c
Streptococci	" " 100 c c
B enterid sporogenes	" " 1,000 c c

B SURFACE WATER

(Eg, rivers, shallow wells, and upland surface waters)

Gelatine count	not over 500 per c c
Bloodheat count	not over 50 per c c
Excretal b coli	Should be absent from 10 c c
Streptococci	" " 10 c c
B enterid sporogenes	" " 100 c c

It will be noticed that surface water standard is just ten times as relaxed as that for deep waters.

The b coli estimation far outweighs in significance, all the others, and is the essential

enumeration upon which to judge the purity of waters.

We can strongly commend this little book by Dr Savage, as a very reliable and complete handbook of water bacteriology.

Current Topics.

MALTA FEVER IN SOUTH AFRICA

Dr P D STRACHAN has sent us a reprint of an interesting article of his in the *South African Medical Record*, in which he shows the considerable prevalence of "Malta," or as he (following the late Capt Hughes) prefers to call it "Undulant" fever in South Africa. This fever has of recent years been shown to be quite common in places far removed from the Mediterranean and far from the sea coast also, and just as we now recognize its existence in India, so Dr Strachan claims that the disease is endemic in South Africa, even on the "high veldt."

As the disease in India is often somewhat colourless, the following note on the symptoms in these South African cases is worth quoting —

"Number of cases, 138		
Continued fever in every case		
Lumbago	87 percentage—	63
Other neuralgia	6	43
Paraplegia	4	29
Joint Effusions	27	195
Pulmonary complications	26	19
Orchitis	8	58
If females are not counted		
Severe Typhoid State	12 percentage	87
Symptomless	30	217
Gastro intestinal distur-		
bance	6	43
Deafness	3	271
Obstinate Epistaxis	1	07
Endocarditis	2	14
Cold Lumbar abscess (post-		
fibrile)	3	217
Acute Nephritis	1	07
Intracranial Disease	2	14
Enlarged Liver	3	36
Enlarged Spleen	4	29

A few remarks may now be made upon the above statistics —

The percentage of joint effusions seems lower than one would expect, considering the prominence given to this complication in the usual descriptions of Undulant fever. Hughes has put them at some 40 per cent. In only three cases were the joint effusions multiple. The joints affected were in order of frequency the knee (13), ankle (9), wrist (4), elbow (3). Joint effusions were most common in children and young adults.

In the four cases recorded, paraplegia followed very severe neuralgia, and affected the legs below the knee. The extensors of the feet were most severely affected and were the last set of muscles to recover. The patellar tendon reflexes were for a time abolished. There was no ankle clonus. Pulmonary complications took the forms of bronchitis and atypical pneumonia. The typhoid state was found only in association with severe pulmonary complications.

Orchitis occurred only in adults. Hughes has put the percentage incidence of orchitis at 4 or 5, but I am not aware whether females were counted or not.

The symptomless cases were for the most part ambulatory.

Although constipation was the rule, it did not, when properly dealt with, lead to troublesome gastro-intestinal disturbances.

The three cases of deafness were associated with a severe typhoid state.

Sweating was a prominent symptom in many of the cases, but in the majority it was not seriously complained of. It may be suggested here that in countries where the atmosphere is exceedingly dry, perspiration tends to become less sensible, and at the same time more efficient as a heat regulator.

Acute nephritis and endocarditis have been noted among Mediterranean cases. Bassett Smith has recently recorded cases of the latter. According to Hughes, renal disease is a serious complication in some prolonged cases.

Dr. Strachan calls attention to severe cerebral symptoms in three cases. Enlargement of the spleen was not well marked. The tongue is described as follows—

"Clean and red during first few weeks, in bad case, white flabby and furred, in the vast majority of cases the tongue is clean and red during the greater part of the disease."

Children apparently suffer least, though their temperature may be very high.

The following note on the serum tests for this fever is worth reproducing at length—

"34 serums in dilution 1 in 10 to 1 in 50

25 positive with *m. melitensis*

3 positive with *B. typhosus*

5 negative with both

Lieut.-Colonel Birt, R.A.M.C., has found positive reaction in 54 serums in O.R. Colony, thirty of these had recovered, the remaining 24 sera were taken from cases during the progress of the disease. In this series the average dilution for a reaction complete or almost complete was 1—242. If the figures of the agglutination limits are taken, a much higher average is obtained. I was enabled to test all the latter myself through the kindness of Lieut. Colonel Birt and Dr. G. Dean, of the Lister Institute, who have kept me supplied with reliable emulsions of *micrococcus melitensis* and *bacillus typhosus*. During the year, September, 1905—1906, only three sera reacted positively with the *bacillus typhosus* in my practice.

All of the tests recorded above were efficiently controlled sera from normal individuals and from cases of typhoid fever and rheumatic fever being used on various occasions as controls in dilution 1—10, with uniformly negative results.

The testing of sera to their agglutination limits naturally involves more trouble and a larger expenditure of the emulsion used. For diagnostic purposes it appears to be quite sufficient to test a serum against the *m. melitensis* in dilutions of 10, 30 and 60, provided a reliable emulsion is used. By a reliable emulsion is meant one which is not agglutinated or sedimented in a dilution of 1—10 in 24 hours by serum from an individual who is not suffering, or has not suffered, from Undulant fever, and which is not auto-agglutinable. According to Birt and Lamb a complete reaction in 1—10 is diagnostic of Undulant fever past or present. This they proved by finding the result negative in 150 sera taken from as many individuals forming a group representing 50 cases of normal health and 100 cases of various diseases other than Undulant fever. Fleet-Surgeon P. W. Bassett Smith, R.N., more recently working with a dilution of 1—30 found absolutely

negative results in 150 cases, representing 41 different diseases other than Undulant fever, with four exceptions, which on further investigation, were found to prove the rule.

If too high a dilution be used, the reaction may be missed altogether, especially in chronic cases, as pointed out recently by Captain Crawford Kennedy and Fleet Surgeon Bassett Smith. There seems to be a rooted prejudice against the use of low dilutions, based perhaps upon the findings of some who have worked with unreliable cultures. I have seen two reports from two separate Government Laboratories in South Africa, in which this attitude is shown. The first was on a sample of blood sent by Dr. D. Campbell at Johannesburg, from a case which had been sent down from Pietersburg (Transvaal) diagnosed malaria. Dr. Campbell requested that the blood should be tested for typhoid and for Malta fever, because there was a history of two months' fever with muscular pains and no rigors.

The following is a copy of the report—

"This serum does not give the Widal enteric reaction. *Micrococcus melitensis* was agglutinated in a 5 per cent dilution, but not in a 1 per cent."

This is probably not diagnostic."

The last statement can be based only upon a want of confidence in the culture used. There is no mention of controls."

The goat and goat's milk are held responsible, although no cultures of *m. melitensis* have yet been grown from the milk or blood of South African goats.

We may quote the following note on the treatment of this tedious disease—

Treatment—Till quite recently the treatment of Undulant fever was purely symptomatic. Dr. Rich of Senegal has reported very favourably on the intravenous injection of collargol as a remedy in "Mediterranean Fever." He recommended an injection of 10 c.c.m. of a 2 per cent solution daily for three or four days. I have received his permission to state that owing to severity of reactions experienced (vomiting and rigors) he has reduced the dosage and frequency as follows—5 c.c.m. every second day until four injections have been given. The treatment by injection of vaccines, *z.e.*, killed cultures of the virus, has been favourably reported on by Reid. It is based on the opsonic theory of Wright. The general practitioner would find it difficult to apply this treatment, for it involves the determining of the opsonic index from time to time in order that the effect of the injections may be gauged. If the strength of the agglutinin in the serum bears a direct relationship to the opsonic index, the procedure might be simplified by substituting the determination of the former for that of the latter.

Both the abovementioned methods of treatment cannot be carried out unless the patient lives within a reasonable distance of his attendant. I have not yet had an opportunity of giving either a fair trial.

In conclusion, the main object of this paper is to show that Undulant fever is widely distributed in South Africa, where it has been endemic for many years. That in all probability the importation of infected goats explains its introduction to this country, and that the goat is now one of the agencies through which it is spread.

TWO UNCLASSIFIED FEVERS OF CEYLON

We referred in our March issue (p. 105) to the question of paratyphoid fever in India, and we see that in the *Journal of Hygiene* (January 1907, p. 1), Dr. A. Castellani, of Colombo, whose good work in tropical disease research we have often noted, has an article on a

long-continued fever characterized by the following symptoms—"Temperature generally irregular, pulse often very slow, spleen not sensibly enlarged, no roseola, slight intestinal symptoms occasionally present, Widal test constantly negative, malarial parasites absent." Such cases, says Dr Castellani, are common in Ceylon, and he thinks they are neither malarial, typhoid or paratyphoid. He gives short accounts of such cases, with symptoms as above, the temperature keeping up for 16, 21, or even 58 days. The following are the conclusions as to the nature of this fever drawn by Dr Castellani—

- (1) There are cases of unclassified fever in Ceylon, which on superficial examination may be taken for atypical forms of typhoid, paratyphoid or malaria.
- (2) Four such cases were examined bacteriologically, and the fourth was different in symptoms and lasted longer than the first three cases.
- (3) From the first three cases a bacillus was grown (in two cases from the blood). The bacillus was non motile, it produced a pellicle in broth, acidified and coagulated milk slowly, produced acid but no gas in glucose, and produced neither gas nor acid in saccharose, manite, dulcitol, lactose, no indol formation. The germ was agglutinated by the blood of the patients.
- (4) From the fourth case a bacillus was isolated, which was non motile. It produced a pellicle in broth, acidified and clotting milk quickly, produced acid but no gas in saccharose, glucose, manite, dulcitol, lactose, it formed indol. The germ was agglutinated by the blood of the patient from whom it was recovered.

If these results are confirmed, it will appear that there are yet two unclassified fevers, one of from two to three weeks' duration, and the other of from seven to eight weeks' duration in Ceylon. It is probable, too, that what applies to Ceylon also applies to India. These are not paratyphoid cases, but different from four cases of paratyphoid which Castellani had already isolated in Ceylon, three of which were due to b paratyphosus A, and one to b paratyphosus B.

TROPICAL VETERINARY SCIENCE

THE second volume of the *Journal of Tropical Veterinary Science* (Thacker, Spink & Co., Calcutta), has made its appearance, and reminds us that it is only a year ago that this excellent periodical first made its appearance. A glance through the index to the first volume will show the enormous amount of good work therein recorded, and the first part of the second volume also contains a series of articles of great value to all interested in tropical parasitology. The new volume opens with a deserved tribute to Dr Griffith Evans, M.R.C.V.S., M.D., late of the Army Veterinary Department, who on September 22nd, 1880, in company with Surgeon-Major Haig, I.M.S., at Deira Ismail Khan, discovered a trypanosome in the blood of a horse, and a few days later the same organism was discovered in a camel's blood. There was some difficulty in those days in persuading the authorities that a new discovery had been made, but the fact that Surgeon-Major T

Lewis, F.R.S., working under the Sanitary Commissioner, India, had just before discovered a trypanosome in the rat, led to the recognition of Evans' discovery, and the work of these two observers may be fairly said to have laid the foundations of trypanosome research. In the present issue of the *Journal of Tropical Veterinary Science*, Prof. Lingard describes his further discoveries in this direction and Indicum, and the T. Evansi, T. Himalayanum, T. in many parts of India.

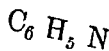
Captain C. H. H. Jolliffe, A.V. Corps, describes the disease known as equine biliary fever, a common disease in India with a somewhat high mortality, it is a disease to which Australian horses are very liable, Arabs less, and country-bred to a still less degree. It is the same disease as has been described by Theiler in S. Africa as "equine malaria." It has been shown to be a form of prioplasmosis and is probably transmitted in the same way by ticks (Ixodidae) as is canine and bovine prioplasmosis, though Captain Jolliffe thinks that some other winged insect may be responsible. There is a translation, too, of the article by Mesnil and Nicolle from the *Annales de l'Institut Pasteur* (t. XX, No. 7), on the treatment of trypanosomiasis by benzidine colour, or as it is fancifully called "chlorotherapy." Many of these new chemicals were tried, and the study of experimental Nagana led the authors to the statement that Cl (or dichlorobenzidine + acid H), which is blue-violet in colour is the "best medicament that we know of at the present day for the treatment" of Nagana. It unfortunately has a great tendency to produce sloughs at the point of injection.

The same authors have also experimented with various arsenical derivatives, and atoxyl* is considered the most efficient, but they conclude their article by saying again that Cl or the colour "dichlorobenzidine + acid H (Bayer)," is the best chemical agent at present known for the treatment of trypanosomiasis.

ANNALS OF TROPICAL MEDICINE

UNDER the title of *Annals of Tropical Medicine and Parasitology*, the enterprising School of Tropical Medicine in Liverpool have brought out a periodical which will replace the valuable series of memoirs which have made this school famous. It is not clear whether the new periodical is to be a monthly or a quarterly—the subscription is 10s 6d, and

* Atoxyl is thus chemically represented—



each part, if purchased separately, is to be charged "at least six shillings each"

The first number contains five articles, all of value and beautifully illustrated. Dis Newstead, Dutton and Todd give a full account of the various insects collected in the Congo Free State, and their article is illustrated by six plates. Dr. Neumann describes two new ticks, Dr. A. Looss describes some of the parasites collected in the museum of the school at Liverpool, Captain Carter Maikham, I.M.S., describes the discovery of the *Spirochaeta duttoni* in the ova of *Ornithodoros moubata*, and concludes that this tick lays infected eggs, and that the multiplication of the spirochaetes probably takes place in the eggs. Dis Moore and Todd suggest the use of atoxyl followed by small doses of bichloride of mercury in case of trypanosomiasis, as this has been found of use in cases of rats affected with *Trypanosoma brucei*. The new periodical is handsomely got up, and we wish it all success.

EXTRACTION OF CATARACT IN THE CAPSULE

THE American monthly *Ophthalmology* (October 1906), has two papers on Henry Smith's operation, which is there termed the "East Indian Operation." In the first Dr. F. E. Cheney, of Boston, reports on ten cases done after Smith's method with certain modifications. Dr. Cheney's experience is limited to ten cases only. He says that "in all of them the visual results are satisfactory, and average better than would an equal number of ordinary extractions recorded as soon after operation." In three the results were ideal, no loss of vitreous, no anterior or posterior synechiae, no infection, and with glasses vision equals 20/20. In 3 cases vitreous was lost, and one of them became infected, not due to the operation or to the loss of vitreous. The other two cases of vitreous loss made good recoveries, one with vision 20/40 and the other 20/20. As to the gravity of vitreous loss in cataract extraction a separation of the retina" (writes Dr. Cheney) "undoubtedly occurs in a certain per cent of cases and a new operation which adds to the per cent of vitreous losses must offer very great advantages over the old to make its general application desirable."

Dr. Cheney continues "My present attitude is that it is reasonable to suppose that with continued operating I should improve in technique." He calculates he would have from 12 to 15 per cent of vitreous losses in his first hundred cases, "the immediate visual results would undoubtedly average better, but incarceration and prolapses of the iris would be of more frequent occurrence than by the ordinary operation. On the other hand vitreous has never been lost in any of my private cases, and in the last 100 cases at the infirmary in but one." He concludes by saying that he believes a small per cent of lenses may with advantage be

extracted in capsule, but that he is not inclined to do "further pioneer work."

Ten cases give a remarkably small experience on which to condemn an operation, which Dr. Cheney admits has many advantages.

It is rather amusing to see the old consolatory remark dragged in about the native patients of India, being an "entirely different and distinct race of people," because experienced operators like Major Herbert at Bombay and Major H. Smith show so few instances ofritis and suppuration. This reminds us of the wonderful toleration of the bladder attributed to poor worn-out malaria-stricken natives when Freyer and Keegan first taught surgeons outside India how to use the lithotrite successfully. European and American surgeons could not get the results that Freyer and Keegan got with litholapaxy, because they had not the daily experience those I. M. S. surgeons had, and exactly the same applies to the good cataract results in India, where the ordinary Civil Surgeon does as many or more cataracts in one year as a consultant ophthalmologist would do in a big city in Europe and America. Hence the skill and the success.

In the same issue of *Ophthalmology*, Dr. Myles Standish writes on his experience of Smith's operation as a method of procedure in cases of immature cataract. Dr. Standish only reports three cases, but he says the "results are probably better, and were achieved with less distress to the patient during convalescence than would have been accomplished by any other method."

We have received many letters from Civil Surgeons on this subject, and it would appear as if this operation of Henry Smith bid fair to be the popular one among the younger Civil Surgeons. We are told it is not more difficult to learn than the ordinary operation, and those who have seen Henry Smith operate have almost always come away convinced supporters of this method.

THE NATURE OF YAWS.

A VERY interesting article on Yaws appears in the *Archiv für Schiffs-und Tropen Hygiene*, January 1907, by Dr. Aldo Castellani, the Director of the Clinic for Tropical Diseases at Colombo.

In India proper this disease is hardly known except in Assam, where it is quite common, and our columns have repeatedly discussed its prevalence in certain districts in Burma. It is essentially a tropical disease, and few, if any, genuine cases have been reported in temperate zones. It is common in Malaya, Siam and in Ceylon, so its absence from the greater part of India is not easy to understand. As is well known after an incubation period not exceeding three or four weeks, Yaws begins by malaise, rheumatic-like pains, headache, irregular rises of

temperature, and a primary sore at some point of inoculation, in men on the trunk or arms and in women often on one of the mammae. It is, therefore, extra-genital. This papule soon enlarges to a large fungoid growth, covered with crust. This single sore is called the "Mother Yaw" in many languages. Soon the typical general eruption begins and furfuraceous, very itchy patches appear. Then follows a crop of flat papules, which soon become moist and are covered with a yellow or brownish crust of desiccated secretion, and under these crusts are yellow or reddish fungoid granulations secreting thin purulent secretion, which soon dries into a crust again.

These growths may be found on any part of the body, but are especially common on the limbs and on the face. In three to six months these dry up and leave dark pigmented spots at their site.

In a few cases sequela of a gumma-like nature follow. Dr Castellani gives the following table of his blood examinations in eight cases—

Cases	Hæmoglobin	Red blood cells per cmm	Leucocytes per cmm	Differential count of leucocytes (% without fractions)					Eosinophiles
				Poly-morphonuclears	Large mononuclears	Small mononuclears	Transition forms		
1 Woman	65	3,900,000	11,000	46	34	9	3	7	
2 Boy	70	4,000,000	9,000	41	26	11	6	10	
3 Girl	60	3,800,000	7,000	64	15	11	3	8	
4 Girl	65	4,100,000	10,000	52	20	15	3	10	
5 Girl	50	3,500,000	6,500	56	11	13	5	15	
6 Boy	60	3,000,000	5,200	60	10	15	5	10	
7 Man	50	3,200,000	6,000	59	10	10	4	12	
8 Man	52	3,100,000	7,400	55	14	16	6	9	

No spirochaetes have been found in the spinal fluid. Castellani in February 1905 found a slender, delicate spirochaete, and this discovery has been confirmed by Powell of Bombay, Borne and others. In fact Borne has found, he says, spirochaetes in 49 cases out of 52. This spirochaete has been named *S. pertenue*, and Castellani recommends the following technique to be used—

"Films are made in the usual way from scrapings of the eruption. It is advisable to select lesions in which a secondary pyogenic infection has not yet taken place. Giemsa stain gives good results, but Leishman's method gives also very good results, if the staining is done according to the following instructions—

- 1 Let the alcoholic solution of Leishman act for five minutes without fixing the films previously.
- 2 Mix the stain with equal or double amount of distilled water and let it act for from one half hour to several hours.
- 3 Wash with distilled water and leave a few drops of it on the films as usual for from half to one minute.
- 4 Blot and examine with very high power.

Incidence of the spirochaete in non-ulcerated lesions of yaws.
The presence of the spirochaete in non ulcerated lesions—provided the case is not too far on the way to

recovery—is practically constant. I have examined 59 cases with positive results in 56—which gives a percentage of 94.9 per cent.

The spirochaete *pertenue* may be found in the enlarged glands. Three cases were examined by me for such purpose and in all the cases the spirochaete was found. The spirochaete so far has not been found in the blood of the general circulation, nor in the urine, nor in the cerebro spinal fluid.

In the two cases of ulcerative processes which I have described as occurring several years after a yaws' attack and which I consider to be sequelae of the disease, comparable to tertiary syphilitic lesions, spirochaetes were not found.

Other spirochaetes and other bacteria are of course to be found in the open sores of yaws. In 1848 Paulet inoculated 14 Negroes with yaws' secretion and all developed yaws in from 12 to 20 days. Chailons in 1881 also inoculated 32 Chinamen and in 28 the disease appeared, beginning at the site of inoculation.

Powell of Bombay described two cases of syphilis following on yaws. According to Neisser, yaws can be inoculated on monkeys and transmitted from monkey to monkey, and monkeys inoculated with syphilis are not immune to yaws. Infection is usually conveyed by direct infection from person to person, by absorption through some abraded surface, or by the aid of flies, and vaccination sores have been so infected.

No one of importance except Jonathan Hutchinson now supports the theory of the identity of yaws with syphilis, though undoubtedly they present many similarities in their symptoms and course.

The disease is a very chronic one and Castellani finds most success in big doses of potassium iodide (45 to 60 grains daily). Big doses are well borne, mercury is far less efficient, though useful in children, the ordinary external surgical treatment is essential.

CLOTHING AND THE SUN'S RAYS

In a recent issue of the *Journal of Tropical Medicine* Dr. Louis Sambon has a short article on a new fabric which apparently he has invented for wear by Europeans in tropical countries.

Our readers may remember that some time ago we reviewed at length a book by Major Woodruff, of the Medical Department of the army of the United States, in which he preached the importance of the protection afforded by the dark skins of the races who dwell in tropical and sub-tropical countries. More recently it has been shown that brunette operators are not so injuriously affected by the X-rays as blondes are. Pigmentation, in short, is nature's defence against the short or actinic rays of the sun, for it is agreed that tanning of the skin or pigmentation is due to these actinic rays and not to the long or heat rays. Dr. Sambon carried out some experiments along with M. Baly, of University College, and the results showed that skin pigment exerts a strong absorptive power

towards the ultra-violet rays of light, and thus confirming the theory that pigmentation affords the natural protection against the ultra-violet rays in sunlight

This being so, the white man in the tropics should wear when in the sun black, red or orange clothing, as long ago urged by Surgeon-Major Andrew Duncan, FRCS (IMS, retired) now Dr Sambon's colleague at the London Tropical School. Natives of tropical countries can wear white because the pigment is in the skin beneath the clothing, but the white man, especially of the blonde or ruddy type has no such protection. It seems, therefore, only common sense to imitate nature in this matter, and while we wear white outer garments these should be lined with a cloth of a more appropriate colour, or better we should use black, red or yellow under-clothing.

Dr Sambon is not content with this simple solving of the problem, but has experimented with many fabrics in order to obtain one which would at the same time exclude the actinic rays and reflect the heat rays, e.g., a cloth with one surface white and the under-surface black, red or orange. An outer white colour of course will not do for the army or for sportsmen, so Dr Sambon, assisted by Mr John Ellis, has produced a fabric which has a "perfect khaki effect" on the outside and a red colour screen on the inner surface, and he states that Mr Baly has examined it at University College and that it has proved as impervious to the actinic rays as is the skin of natives of tropical countries. This cloth is called Solario.

We have not yet seen specimens of this cloth, but we note that it is obtainable at Messrs Ellis and Johns, Tailors, 21, South Moulton Street, London, W.

THE Bulletin of the Imperial Institute is a record of scientific and technical investigations, and is specially devoted to the progress of tropical agriculture and the industrial utilization of raw materials. It is published quarterly, price 1s.

MEDICAL men often have to dose their own horses or give advice to the owners of others, so that the following table of the dosage of some common drugs for equines, which we extract from an article by Captain Jolliffe, A.V. Corps (in *Jour. Trop. Vet. Sci.*), will be of interest—

	An average human dose	An average equine dose
Aloe Barb	grs iii	3 ℥ (= × 100)
Mag Sulph	3 ii	3 ℥ iii (= × 32)
Strychnine	gr ʒi	gr i (= × 30)
Tinct Opn	m xv	3 i (= × 32)
Chloral Hydras	grs x	3 i (= × 48)
Liq Arsenicals	m v	3 ℥ (= × 48)
Potass Nitras	grs x	3 ℥ (= × 18)
Atropine	gr ʒi	gr ʒi (= × 25)

IN a valuable paper (*Journal of Hygiene*, January 1907, p 155, etc.) Fleet Surgeon P W Basset-Smith, RN, gives the results of his experiment on treating Malta Fever with vaccines. We know that so far no satisfactory treatment has been found for this tedious long-continued but seldom fatal fever, yet all sorts of drugs have been tried and some have said that "Cyllin" could cut short the disease, others have pinned their faith on Burney-Yeo's chlorine mixture. We cannot here with any satisfaction summarize Fleet Surgeon Basset-Smith's experiments, but we must record the fact that the vaccine treatment, while it benefited a few cases, yet in the more acute cases the method appears to have a deleterious instead of a favourable action.

It is worth noting, by officers in charge of vaccine depôts, that Dr A B Green, of the vaccine department of the Lister Institute, has shown by his experiments that the prolonged exposure of vaccinated animals to the chemical rays of daylight prevents to a greater or lesser extent the development of vaccinia in rabbits, goats and probably in calves.

DR F C WELLMAN, writing from Angola in October last, claims to have demonstrated that the tick *Ornithodoros Moubata*, Murray, plays the same rôle for filaria perstans as the mosquito does for nocturna.

VOLUME II, Part II, of the new edition of Allbutt's *System of Medicine* has just come in as we go to press. In this volume are collected all the articles on tropical diseases and animal parasites which were spread over many volumes of the first edition. They have all been rewritten, and this volume now forms the latest and most authoritative book on diseases of the tropics. We shall review it at length later.

IN our present issue Lt-Col Crawford gives us another instalment of his sketch of the History of the I M S, and his account of the many changes, in rank, pay, pension, leave, etc., will be read with great interest by many of our readers. We shall give another instalment in our next issue.

Reviews

A Handbook of Diseases of the Eye and their Treatment—By H R SWANZY, AM, MD, FRCSJ, and LOUIS WERNER, MB, FRCSJ. Ninth Edition, with Illustrations. London: H K Lewis, 1907. 12s 6d. Pp xx and 744.

THE ninth edition of this well-known textbook fully maintains the high standard previously reached. Mr Swanzy has been fortunate in

securing so excellent a *collaborateur* as Mr Louis Werne, and the new edition shows signs of careful revision and improvements at the hands of both authors. The new features are principally more illustrations (sixty more), a new chapter on elementary optics, fairly complete information about the bacteriology of the conjunctiva and its affections, and a description of heterophoria, a subject regarding which our British text-books still lag behind the American.

It is unnecessary to review such a standard work as this, and we need only say that the new edition, even more than the old, meets all the wants of student and practitioner, and can be well recommended as a practical guide to ophthalmology.

The Essential Similarity of Innocent and Malignant Tumours.—By CHARLES W. CATHCART, M.A., F.R.C.S., Surgeon, Royal Infirmary, Edinburgh. Price, 9s 6d net.

THE title of this very interesting book indicates to a large extent the nature of the case which the author undertakes to establish. Mr Cathcart's argument is as follows—

1 In tumours there is sometimes a gradation in character from innocent to malignant which can be demonstrated.

2 There is a transformation in character from innocent to malignant which may sometimes be observed in the same tumour.

3 There are certain combinations of character which can sometimes be observed in the same tumour, *viz.*, it may show most of the characters of an innocent tumour, but at the same time have certain features indicating malignancy.

These three propositions are supported by a series of cases which are illustrated by photographs of specimens, both naked eye and microscopic. Taking these propositions as proved, Mr Cathcart insists that all investigations into the nature of cancer should take into account the innocent as well as the malignant tumours, and that in treatment the surgeon should always have in view the possibility that any tumour may have the taint of malignancy.

Up to this point most people who have given any serious thought to the question will be inclined to agree with Mr Cathcart, and to feel grateful to him for stating so clearly and so forcibly the case against the dogmatic and misleading classification of tumours which still holds the field and which is calculated to lead the student to believe that all tumours are either definitely innocent or definitely malignant, and also to believe that the malignant tumours are of an essentially different nature from the innocent.

But it is with some disappointment that we find Mr Cathcart suggesting that the classification of the future should depend on two features which he holds to be quite distinct from each other, *viz.*, the structural and the clinical characters. He suggests that the large groups of tumour should be classed according to the

predominant structure, but that these groups should be subdivided according to clinical instead of histological characters.

Mr Cathcart appears to argue that because in the past the pathologist has in some cases been unable to tell from the microscopic structure of a thin slice taken from a small part of a tumour at one particular stage of its development what its clinical course was going to be, we must therefore consider the attempt at structural classification to be a failure.

But on the other hand in the great majority of cases there is an obvious relationship between the structure of a tumour and its clinical manifestations, and in the few cases where there are apparent discrepancies there are several possible explanations—

1 A tumour may be benign in one part and malignant in another, and the malignant part may have been overlooked.

2 A benign tumour may become malignant at any time, just in the same way as any part of the body may become the site of a malignant growth, and it is as unreasonable to expect to foretell the change in an innocent tumour, as it would be to ask a pathologist to tell whether a definite organ is likely to be the site of a cancer.

3 In certain cases it is probable that the traditional views regarding the innocence or malignancy of certain tumours may be mistaken, especially in the case of those which are on the borderland and which show a combination of characters, but the remedy for this state of affairs is not the adoption of a clinical classification, but the more accurate interpretation of the clinical significance of the structures concerned.

But the most serious objection to the clinical classification of tumours is that the modern tendency of surgery is to extirpate every growth at the earliest possible stage, so that in the future it is to be hoped that tumours will rarely be seen at a time when they have begun to show their clinical features, and therefore the suggested classification will be applicable to only a small and steadily diminishing number of tumours.

We think that Mr Cathcart has not proved his case against the structural classification of tumours, and even if he had, his alternative classification would be still more erroneous and more difficult of application.

But apart from this point which is really not an essential part of Mr Cathcart's thesis, we welcome his clear and vigorous attack on the false views regarding the nature of tumours which have held the field for so long.

Anæsthetics; their uses and administration

—By DUDLEY WILMOT BUXTON, M.D., B.S., M.R.C.P., Administrator of Anæsthetics and Lecturer in University College Hospital, &c., &c. Fourth Edition. Pp. viii + 415. Crown 8vo. Price, 7s 6d. (Lewis' Practical Series.) London: H. K. Lewis, 1907.

THE new edition of this well-known book has been thoroughly revised and brought up to date.

Fresh articles have been added dealing with the dosimetry in chloroform, the use of ethyl chloride as a general anæsthetic, and the production of anæsthesia by spinal injection. There is an excellent description of Vernon Harcourt's Chloroform Inhaler, a form of apparatus which we think is likely to be exceedingly popular in India as soon as it becomes better known. The articles on local analgesia and spinal anæsthesia contain an excellent résumé of recent work in these subjects. This book has already taken its place as quite one of the best smaller works on the subject of anæsthesia, and we think this new edition will more than maintain its well deserved reputation. We can cordially recommend it to all practitioners in this country as a thoroughly reliable, valuable, and up-to-date guide.

The printing, binding, etc., are of the same style and excellence as those of the other books in this well-known series.

Plague Prevention in Nagpur—By LIEUTENANT-COLONEL ANDREW BUCHANAN, I.M.S. The Pioneer Press, 1907.

A TIMELY and practical pamphlet has been published by Lieut-Colonel Andrew Buchanan, I.M.S., late officiating Civil Surgeon of Nagpur. It gives an account of the experiment in plague prevention carried out at Nagpur and, in the words of the writer, "justifies the conclusion that the days of big epidemics in Nagpur have passed."

We need not follow the argument used in favour of the view that rats are the cause of a plague epidemic, as they are well known and admitted by our readers. Lt-Col Andrew Buchanan refers to our special plague number, and says, that a perusal of the articles in it on the subject of rats and plague would certainly dispel the doubts of any one who is still sceptical on this matter.

The pamphlet then goes on to discuss the early difficulties as to Hindu prejudices and rat-catching. In one village a *Guru* advised the people not to kill rats and not to leave the village, with the result that out of 5,000 people no less than 600 died, and the "*Guru* has become very unpopular," and the baneful effects of his interference have been appreciated by the surviving villagers.

Pamphlets were published and circulated to Heads of offices, Mills, etc., in which the objections to rat-killing were specifically met and answered. Chapter III discussed the method of rat extermination and the value of the plan of paying rewards. The advice is also given to keep cats.

We can strongly recommend this very practical pamphlet to all Civil Surgeons who have plague in their districts. It will be found very useful and we will not spoil it by attempting to give any further extracts from it.

Aids to Surgery—By J. CUNNING, London. Baillière, Tindall & Cox. Price 4s 6d Fcap, 8vo Pp xiv + 383.

THIS is one of the best of these little books, it was published in 1903 and has been twice reprinted. Surgery is too big a subject to compress, but in the 383 pages in this book an enormous mass of information has been concentrated. The result is, that to the student who knows his big textbook, this little volume will be welcome as a résumé of the subject.

We have tested various sections and chapters and find the teaching quite up-to-date.

These books have their value, and as modern substitutes for the older student's note-books they are very good. This series, published by Messrs Baillière, Tindall & Cox, are especially good.

Anæsthetics and their Administration—By FREDERICK W. HEWITT, M.V.O., M.A., M.D. Third Edition. Price 15s net. Macmillan & Co., London.

SUCH a well-known book as this scarcely requires a long notice. In this Third Edition to enable the size of the book to be maintained some compression of the material in the earlier editions has been carried out, and some new chapters added.

The physiology of the various anæsthetics used is first considered. The second part deals with the condition of the patient, the nature of the operation to be performed, the posture of the patient, and the choice of an anæsthetic, etc.

The method of administration of the various anæsthetics is then considered.

Considering chloroform which has the greatest interest for practitioners in India, the various methods are first considered very well and fully. As regards the Vernon Harcourt Inhaler, its advantages and disadvantages are fairly discussed, but the author "cannot too strongly dissent from the view that chloroform accidents are to be entirely prevented by regulating chloroform percentages." The causes of chloroform fatalities are well dealt with. The concluding part of the work treats of the management of the difficulties, accidents and dangers of general surgical anæsthesia and is well worthy of perusal, respiratory arrest, circulatory failure, their causation, connection with one another and with the surgical procedure being fully discussed.

In conclusion, this edition has surpassed the excellence of the previous ones, and the book should long continue to be the standard work on the subject. The printing, etc., is also good.

The Diagnosis and Treatment of Intussusception—By CHARLES P. B. CLUBBE. Young J. Pentland, Edinburgh and London.

THIS book is essentially practical and is based upon the author's experience of 144 cases. The varieties of intussusception are shortly touched upon and the need for an altered classification, the growth of operative treatment and the

increased rate of recoveries when this is carried out is proved from various statistics. The symptoms are well described and also the treatment. The author is in favour of beginning the treatment by ujection, the method preferred being warm olive oil injected with a Higginson's syringe followed up by operation if the reduction is not complete. An appendix of cases follows. The book is well worth reading as the result of an operator's experience.

Medical Electricity A Practical Handbook for Students and Practitioners—By H. LEWIS JONES, M.A., M.D. Demy 8vo Pp 519 Figs 185, Plates XI Price 12s 6d

THIS is the 5th edition of the book. Comparison with the 4th edition is difficult, because the changes made in arrangement and in additions and omissions are extensive.

In the place of considering each method of therapeutic application of electricity and detailing the various diseases which may be treated by that particular method, the matter is looked at in this edition from the clinical standpoint, and the disease being stated, the various electrical methods by which it may be treated are described, a method more useful to the ordinary practitioner.

The most important additions are these—

The conception of the atom with its electrical charge as an ion, and of its appearing to be composed of positive and negative electricity and nothing else is dwelt on, and a feature is made of the therapeutic effects of the introduction of ions by electrolysis.

The consideration of X-rays is much fuller than in the last edition, and this amplification is not confined to the chapter on the Röntgen X-rays, but consists also in considerable additions throughout the therapeutic part of the book. Nearly the whole of the pages on radium are new.

Head's remarkable address to the Medico-Chirurgical Society in 1905 on "sensation," based essentially on the effects produced by the deliberate section of the cutaneous branch of his own radial nerve, and which we believe have only been hitherto available in the proceedings of that Society, are summarized clearly, so that his reasons for dividing sensation into "protopathic," "epicritic" and "deep" forms are to be readily realized.

The book has been brought thoroughly up to date, and in spite of large additions to the printed matter and an increase of the figures from 168 to 185, has, by much excision and condensation been slightly reduced in size. The paper, too, is of a better quality.

The fact of its having reached a 5th edition speaks for itself, and the improvements in internal arrangement and its up-to-date character will doubtless make it even more popular.

Correspondence.

THE HYPODERMIC USE OF QUININE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—With reference to the correspondence in the March number of your Gazette, in the use of quinine, I can fully endorse the efficiency of administering the drug 'with the needle.' Since my connection with the General Hospital, Madras, as 4th Physician, some 4 years now, I have always given quinine by this method, and have only once seen a bad result, in the shape of a superficial abscess. The salt used is the acid hydrochloride of quinine which will dissolve in equal parts of distilled water. This solution is made up in the dispensary of the hospital, in an ounce bottle, and used when required.

The technique is as follows—

1. A small hypodermic syringe is used, the needle of which is sterilized by boiling for 2–3 mins. in a test tube. The syringe is washed out with 1 in 20 carbolic lotion by means of drawing up some of the lotion into the syringe 3–4 times. A small spoon is also placed in the 1 in 20 carbolic lotion and is used to receive the quinine lotion when it is poured out from the bottle previous to changing the syringe. The glass stopper together with the neck and mouth of the bottle are thoroughly cleaned with a sponge dipped in 1 in 20, and the pricks, into which the solution is to be injected is, of course, prepared in the usual way. I consider all the above details absolutely essential, especially the cleansing of the bottle—a point likely to be forgotten.

The dose is 10 minims equal to 10 grs of the salt intramuscularly in the deltoid muscle. If it be given hypodermically, trouble in the shape of a superficial abscess may arise, never, however, when introduced into the muscle. As to tetanus, such a disease should never deter one from intramuscular injections if the above precautions are taken. I have been injected in the deltoid on many occasions about 10 A.M., and have played polo the same evening, which speaks for itself as regards after local effects.

Sometimes a slight aching sensation occurs whilst the solution is being injected but it passes off immediately.

To my mind there is no comparison, in the two methods, *i.e.*, by injection, and mouth. By the former method you make absolutely sure of the patient receiving the dose of quinine which you administer, and you do not derange the digestive organ. And, the patient must have quickly come under the influence of the drug—a very important factor in 'malignant' cases. The temperature comes to normal in 24–30 hours and stays there. In my wards the usual practice is to inject in three successive days and then on alternate days for the week to make sure of the patient being quinized.

I have never seen symptoms of cinchonism from this method. I would add that all the cases are diagnosed by the fading of the plasmodium malarie before the quinine is given, even if it means the patient remaining a few days in the wards before he receives any specific treatment.

Yours &c,
T. H. SYMONS,
Capt., I.M.S.

THE GENERAL HOSPITAL, MADRAS

THE HYPODERMIC USE OF QUININE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In reference to the letter in your March issue by Major W. E. S. Moncrieff, I.M.S., we beg to inform you that we can supply Ac. hydrobromide of quinine, and shall be pleased to supply any of your readers with a sample upon application.

BOMBAY,
20th March 1907

Yours, &c,
TREACHER & Co., LTD

SEPSIS AND ASEPSIS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I should feel much obliged if any of your readers will help me out of a little difficulty. I do not understand what the exact significance of the word 'septic' is, specially as applied to abscesses. Is an ordinary unopened abscess of pus due to the action of pyogenic micrococci and contains in it one or other species of these? The presence of these alone, however, would not justify us in calling a collection of pus septic, if the criterion of sepsis be the presence of purely saprophytic microorganisms, *e.g.*, proteus vulgaris, since all pyogenic micrococci are pathogenic, at any rate facultatively so, even the staphylococci can inject living

tissues and exist in them. If this be so, we find ourselves reduced to the necessity of calling an abscess 'aseptic' which an abscess, obviously, is not, since sepsis means absence of all micro organisms, whether pathogenic or saprophytic, whereas an abscess we have seen, almost invariably contains pyococci. As far as my knowledge goes, there is no term in the medical vocabulary which is intermediate between 'septic' and 'aseptic'. In other words there is no term which could be applied appropriately to pyogenic injection as distinct from purely saprophytic or mixed injection. Yet in most books the word 'sepsis' is used synonymously with suppuration. For instance, Major Newman uses the words 'sepsis' and 'septic' in this sense, on many occasions in his book on Aseptic Surgery. Coates writes in his Manual of Pathology that "suppuration is a feature of most septic injections and may indeed be almost regarded as the principal local effect and criterion of such injection," yet I have known competent medical men take exception to this statement and object to my calling an abscess septic on the ground that there was no putrefaction in it. So the question remains whether pus formation is, or is not, the criterion of sepsis, and if not, what other criterion is there?

UNAO, } Yours, &c,
13th March 1907 } R. K. KACKER, L.M.S.,
Civil Assistant Surgeon

MAJOR E. A. R. NEWMAN replies for us, as follows—

"The word 'septic' in a surgical sense applied to any object or process, signifies the presence of pathogenic or facultatively pathogenic micro organisms on it or in connection with it. It matters not whether they are pyogenic, saprophytic, or otherwise. An ordinary unopened abscess is unquestionably septic. Aseptic signifies the opposite condition. The ultimate test of septicity or asepticity is the bacteriological test. There is no intermediate state possible, in the strictest sense of the terms. Clinically speaking, the bacteriological test is not always practicable, and as regards wounds the clinical test, *i.e.*, the presence or absence of any signs of inflammation is employed. Hence the anomaly of bacteria being shown to be present in so called 'aseptic' wounds. It is true they are of low virulence, yet they are facultatively pathogenic, and accordingly such a wound is not truly aseptic in bacteriological sense, though it appears to be so in the looser clinical sense. Neither putrefaction or suppuration are the final criteria of sepsis. Terriers and pariahs are dogs, but all dogs are not terriers or pariahs. The objection above given cannot be sustained. Suppuration as noted in Coates' definition is the commonest manifestation of local sepsis, and is consequently most frequently cited as evidence of sepsis. The latter condition includes the former, but the former is not the only manifestation of the latter. In some of the most violently septic conditions no pus is formed: acute forms of cellulitis, spreading gangrene and erysipelas are instances in point.

The final test of sepsis is the bacteriological one, with regard to wounds, the clinical test, *i.e.*, the presence or absence of signs of inflammation is more usually employed."

CONSERVANCY IN SMALL TOWNS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—With reference to Major Entrican's notes on the conservancy of the smaller towns in Burma in your issue for February 1907, there are two points in the Bassem system to which he has not drawn attention, but which perhaps deserve mention.

1. Within the conserved area of Bassem, a sort of light rail road exists for the conservancy carts. This railroad is provided with a number of turn tables at definite points. All our carts run on this railroad, and they leave the depot in the morning in batches of 3 to 4 carts. One bullock can easily pull 4 of the larger carts carrying 36 buckets each. The carts having arrived at what is known as a collecting station, they are split up, each single cart going to the latrines or houses from which its buckets are to be collected, and then returning to the collecting station. The single carts can be pushed along by the sweepers in charge.

There are a certain number of fixed collecting stations in various parts of the town. As the carts arrive back at these stations, they are yoked together in batches of 3 to 4, and pulled back to the depot by a bullock. Our tramway line runs through the streets, but when an extension is needed, we shall try to construct special conservancy lanes.

The other point I referred to, is one of minor importance, but it enables one to check the work of the sweepers, and see at a glance whether they are replacing the soiled by clean buckets. Half our buckets are painted with a thick broad band of red paint, and the other half with a similar band of tar.

The black buckets are in use one day, the red the next. If Monday happens to be a black bucket day, then on

Monday black buckets are issued and soiled red buckets returned. By this means, on the return of carts, the Depot Inspector can tell how many latrines have been conserved, and the Sanitary Inspector, when he visits latrines, can tell if all the buckets have been put there the morning of his visit or not.

We prevent spilling of contents of buckets by smearing a little damp clay round the edge, so that the cover fits tightly, but I am now trying Major Entrican's plan in addition, *viz.*, saw dust and husk.

BASSLIN,
March 1907

Yours, &c,
P. DEE, C.A.T., I.M.S.,
Civil Surgeon

THE INDIAN MEDICAL SERVICE

By D. G. CRAWFORD, M.B.,

LIEUT.-COLONEL, I.M.S.,

Civil Surgeon, Hughli

(Continued from page 157)

5 Rank.—Prior to the formation of the regular Indian Medical Service on 1st January 1764, medical officers cannot be said to have had any rank at all. Towards the latter part of the seventeenth century, the officers serving at Hughli, then the head quarters of the Company's Settlements in Bengal, were ranked as follows: (1) The Agent, who was Chief of all the Factories in the Bay, (2) the Accountant, (3) the Chaplain, (4) the Store Keeper, (5) the Purser Marine, (6) the Surgeon, (7) the Secretary, (8) the Steward. All except the Chaplain and the Surgeon were members of the Company's regular Civil Service. Below the Steward came the general body of junior Civilians, the Factors, Writers, and Apprentices.

When the service was first formally constituted, three ranks were recognized, Head Surgeons, Surgeons, and Hospital mates. In Bengal the numbers were four Head Surgeons, in charge of the Calcutta General Hospitals, eight Surgeons, and 28 Hospital mates. These forty officers constituted the Bengal Medical Service. The numbers, however, rapidly increased, and by 1785 had risen to 149. The strength of the service had nearly quadrupled in twenty years. A general letter to Court, dated 23rd March 1785, gives the numbers of officers on the Bengal Medical Establishment, and shows 4 Surgeon Majors, 52 Surgeons, and 93 Assistant Surgeons. The title of Hospital mate had already been changed to Assistant Surgeon. But all the medical officers are called Warrant officers, as opposed to Commissioned officers. It was not until the passing of the orders of 24th October 1788 that medical officers became duly Commissioned Officers.

The titles of higher ranks seem to have been some what vaguely used at first. The four officers who head the list of the service all held a higher title than Surgeon. The first, Thomas Anderson, became Surgeon General in 1769, and died in 1777. The second, James Ellis, is called Physician General, he resigned in 1789. The third, Daniel Campbell, who resigned in 1783, also had the title of Surgeon General. The fourth, Andrew Williams, who resigned in 1787, is called Chief Surgeon. Only four officers in 1764 to 1837 have the title of Surgeon Major, and two of these had died, and the other two retired, before 1785. Who the four officers who ranked as Surgeon Majors in 1785, as mentioned above, were the lists do not show. The titles of Physician General and Surgeon-General do not appear again till 1843, that of Surgeon Major not till 1861.

No definite time was fixed for promotion from Assistant Surgeon to Surgeon, a few fortunate officers, like John Fleming, got their promotion after about three years' service, a few took about twenty years, the general average was about 12 to 15 years. The first instance of a large number of officers being promoted on the same day from Assistant Surgeon to Surgeon was on 5th May 1826.

The title of Head Surgeon certainly was in existence before the service was instituted, as two of the officers who fell in the Patna massacre of October 1763 are entitled Head Surgeons. These officers, like the Head Surgeons appointed in the order founding the service, probably had little or no administrative authority, but were the officers holding the most important appointments.

The formation of the Medical Board, constituted in Bengal from 29th May 1786, was the first definite formation of an administrative grade. The Board in each Presidency consisted of three members. The Head Surgeons up to the end of the eighteenth century, were the administrative officers of the large military general hospitals, situated at the chief cantonments, and any administrative powers outside their own hospitals, which they might have at this period were extremely vague. Of these general hospitals there were six in the Bengal Presidency, Calcutta or the Presidency, Barhampur, Dinapur, Chunar, Cawnpore, and Futehgurh. The title of Superintending Surgeon is used in the Army Lists in the East India Register, in the Madras and Bombay services from 1803, in the Bengal service not till August 1808. The title Superintending Surgeon first appears in the *Calcutta Gazette* in the issue of 18th June 1807, publishing General Orders of 28th May 1807. It may be taken that, from about the beginning of the nineteenth century, Superintending Surgeons, who were real administrative officers, one to each division of the Army, took the place of the Head Surgeons of general hospitals as administrative medical officers. As the strength of the Army gradually increased, the number of Superintending Surgeons also grew, until in 1857 there were in Bengal no less than twelve, one for each of the following divisions of the Army: Presidency, Barhampur, Bakka, Benares, Cawnpore, Saugor, Meerut, Agra, Sirhind, Lahore, Sialkot, Peshawar. There were also a few officers who had local rank as Superintending Surgeons of various Contingents and Irregular Forces, e.g., of the Gwalior Contingent. These were the Administrative Officers of the Bengal Medical Service alone, without taking into account the Madras and Bombay Armies, and in addition, there were a number of Superintending Surgeons of the A. M. D. serving in India.

The Medical Board from the earliest period seems to have done some inspection of hospitals. An order in Council, dated the 17th July 1794, directs Mr. John Lind, Senior Member of the Medical Board, to inspect the hospitals at the "upper stations," under the orders of the Commander in Chief.

In 1842, a change was made in the constitution, or rather in the nomenclature of the Medical Board. The three members, instead of being called simply first or senior, second, and third or junior, member of the Board, received different titles, the senior being called Physician General, the second Surgeon-General, and the junior Inspector General of Hospitals. The Medical Boards were finally abolished from 12th November 1857, after an existence of seventy years.

In the East India Register of 1843, the following table of relative rank appears for the first time—

Ranked with	
Physician General	Brigadier Generals
Surgeon General	
Inspector General of Hospitals	
Superintending Surgeons	Lieutenant Colonels
Senior Surgeons	Majors
Surgeons	Captains
Assistant Surgeons	Lieutenants

The length of service required to attain the grade of Senior Surgeon was thirty years. In the East India Register for 1843, the grade includes only two men, besides the members of the Medical Board and the Superintending Surgeons.

Surgeons appear always to have ranked with Captains, and Assistant Surgeons with Lieutenants.

If the relative rank of the former appears low, in comparison with the length of service which most of them had attained, it must be remembered that, in the eighteenth century, the Commandant of a Native Regiment or "Sepoy Battalion" was usually an officer of the rank of Captain, while an army in the field might be commanded by a Major.

When the Medical Board was abolished, from 12th November 1857, its place, in Bengal, was filled by one Director General and two Inspectors General, one for Bengal and Burma, the other for the North West Provinces and the Punjab. The officer appointed as the junior of these two I G's, Campbell Mackinnon, stepped over the heads of sixteen other officers, including all the Superintending Surgeons. This was the first instance in the I. M. S. of wholesale supersession. At the same time the Superintending Surgeons became Deputy Inspectors General. For the next few years, promotion in the Bengal Medical Service was brisk. Thirty officers, of whom three were Superintending Surgeons, had fallen in the Mutiny, many others had retired on account of the hardships experienced in and sickness caused by the long campaign, and with fifteen administrative appointments, promotion ran quickly. This number, however, was speedily reduced. Sir John Forsyth was the first and last Director General at this time. On his retirement, on 25th April 1862, the title of Director-General was changed to Principal Inspector General, a mere change of name but from 1st September 1866, the appointment of Principal I. G. was abolished, and from 31st March 1869, the second Inspector Generalship was also absorbed, the number of I. G's having thus been reduced in less than three years from three to one. In 1872, the titles of Inspector General and Deputy Inspector General were changed to Surgeon-General and Deputy Surgeon-General. In 1880, the number of Deputy Surgeons-General was reduced from thirteen (the thirteenth being a Civil Deputy Surgeon General recently appointed for Lower Bengal) to nine, as compensation to the service, the Provincial Sanitary Commissioners were given the rank, title, pay, and pensions of Deputy Surgeon General on completion of 26 years' service. Twenty-six years was then supposed to be the normal period at which promotion to D. S. G. might be expected. Two officers had attained this rank in 1879 with 26 years' service. The next eight officers promoted to this rank, in 1882-84, had all from 28½ to 29½ years' service (except one who was promoted over the heads of several seniors), and the next men promoted had over thirty years' service before they attained the administrative grade. The service as a whole might be considered fairly compensated by the addition of the Sanitary Commissioners to the number of D. S. G's, but the fact that several of their juniors went over their heads was small consolation to the senior Brigade Surgeons, who found themselves retired for age before vacancies for promotion to D. S. G. were available for them, vacancies which, but for the reduction in 1880, they might reasonably have expected, and thus permanently lost promotion with its extra pay and pension. In fact, so great was the outcry at this wholesale supersession, that only one Sanitary Commissioner in each province got promotion to the rank of D. S. G., and in 1887 the special early promotion of Sanitary Commissioners was discontinued. As compensation, four extra pensions of £100 a year each, two in Bengal, and one each in Madras and Bombay, were granted yearly to senior officers who had to retire without being promoted. Even these extra pensions are available only for officers who entered the service up to 1899.

Up to 1880 the Administrative Medical Officers discharged both civil and military duties, their circles including all native hospitals, both civil and military, within their respective areas. As they were primarily military officers, this was found inconvenient to the Civil Administrations, and the Governments of the N. W. P.

and the Panjab appointed officers under them as Inspectors of Civil Hospitals, who inspected all civil hospitals in their respective provinces, but held no special rank in virtue of their appointments. The Administrative Medical Officers of the A M D had under them the hospitals of British troops only, they had nothing to do with the native army. By the reorganization of 1880 the Civil Medical Administration was placed under an officer with the rank of Surgeon General, his title being "Surgeon General and Sanitary Commissioner with the Government of India." The first officer to hold that appointment was—J M Cunningham, who by his promotion superseded seven senior officers. The number of D S G's was reduced from thirteen to nine, viz, four civil, for Bengal, the N W P, the Panjab, and the Central Provinces, four military, for the Presidency, Lahore, and Sagar and Nabadia Districts, and the Panjab Frontier Force, and one, Assam, with both civil and military duties. The hospitals of British as well as of native troops were placed under the D S G's of the I M S in military employ the D S G's of the A M D also taking over the hospitals of native troops in their own circles, and none, except Assam, having any concern with civil hospitals. The Military D S G's were all placed under the Principal Medical Officer, Her Majesty's Forces in India, an appointment which was open to the I M S as well as to the A M D, but which, as a matter of fact, was always held by an officer of the latter service. Since 1880, the headquarters of the Military Administrative Medical Officers have been somewhat changed. The Civil Administrative Medical Officers of Bengal, the N W P, and the Panjab were given the local rank and title of Surgeon General in 1880, in 1885 this local rank was abolished, and their title changed to Inspector General of Civil Hospitals.

The title of Surgeon Major appears in the Army List for the first time (with the exception of the few officers who appear to have held that title between 1764 and 1790), in 1861, when all the Surgeons of over 20 years' service have Surgeon Major shown in a footnote below their names in the East India Register. It was not till 1873 that Surgeon Major appeared as a definite and separate rank in the service. Four Assistant Surgeons were promoted to Brevet Surgeon, for their services in the Mutiny, from 7th September 1858. Such special promotions for special service have always been very sparingly given in the I M S.

In 1873, the title of Assistant Surgeon was dropped altogether, officers entering as Surgeons, but for seven years more Surgeons only ranked as Lieutenants for their first six years' service. In 1880 Surgeons were given the rank of Captain on first joining, an order which gave rise to much ill will in other services, especially in the Staff Corps, and indeed it was anomalous and hardly defensible that a newly joined Surgeon should rank senior to a Subaltern of eleven years' service. Lieutenants in the Staff Corps then had to serve twelve years before attaining the rank of Captain. Under the Royal Warrant of 16th November 1880, the rank of Brigade Surgeon was introduced in the I M S, with effect from 27th November 1879. The compound titles, Surgeon Lieutenant, Surgeon Captain, (Surgeon Major as before), Surgeon Lieutenant Colonel, Brigade Surgeon Lieutenant Colonel, Surgeon Colonel, and Surgeon Major General were introduced by the Royal Warrant of 14th December 1891, which also re-introduced the rank of Lieutenant, officers being promoted from Lieutenant to Captain after three years' service. The Royal Warrant of 26th August 1898 substituted for the compound titles, the corresponding military titles. At the same time the rank of Brigade Surgeon Lieutenant-Colonel was dropped, and in its place a certain number of Lieutenant Colonels were called "Lieutenant Colonels on the selected list" (for promotion). As the number of these selected Lieutenant Colonels in the I M S is more than double the number of Colonels, obviously over half of them can

never get promotion.

When the Indian Army was reorganized into four Army Corps, some further alterations were made, from 1st April 1895. A Surgeon General was allotted to each Army Corps, the appointments for Bengal and Bombay being given to the Medical Staff,* that for the Panjab to the Bengal Service, and that for Madras to the Madras and Bombay Services alternately. The appointment of Principal Medical Officer, Her Majesty's Forces was reserved for the Medical Staff. At the same time the Civil Medical Administration was also to some extent reorganized. The officer at the head of the I M S again received the title of Director General, and the three hitherto independent services of Bengal, Madras, and Bombay, were all to a certain extent placed under him. The appointment of Director General is open to all the three services, but all the four officers who have hitherto held the appointment have been Bengal men. The number of D S G's, or, as they were then called, Surgeon Colonels, in Bengal was reduced from nine to eight, the ninth place being absorbed, against the new appointment created, of Surgeon General of the Panjab Army Corps.

The Madras Command has since been abolished as a separate entity, and with it its Surgeon General has also disappeared. The administrative appointments now open to the I M S, are as follows—

Surgeon Generals—

- (1) Director General, I M S, Bengal
- (2) Surgeon General, Northern Command, Bengal
- (3) Civil Surgeon General, Madras
- (4) Civil Surgeon General, Bombay

Colonels—

- (1) Inspector General of Civil Hospitals, Bengal
- (2) Do do E B & Assam
- (3) Do do U P & Oudh
- (4) Do do Panjab
- (5) Do do Burma
- (6) Administrative Medical Officer, Central Provinces
- (7) 16 Ten Military Colonelcies

There are now besides four Surgeon Generals twenty one administrative medical appointments in the Army, of which ten are held by the R A M C, and ten by I M S officers with the rank of Colonel, the two services being interchangeable, and no particular appointment being reserved for either service. The twenty first appointment, that of P M O of the Derajat and Bannu Brigades, is reserved for a Lieutenant Colonel of the I M S. The P M O of the Karachi Brigade is also Civil Administrative Medical Officer of Sind, the other appointments are all purely military. Of these ten Colonels' appointments, four are now held by Bengal, three each by Madras and Bombay. Madras has one Civil Colonel's appointment, Bombay has none, while Bengal has five.

At the beginning of 1907, the junior full Colonel on the Bengal list had attained that rank with 28½ years' service, in Madras with 31½ years, in Bombay with 29½ years. The junior officers on the "selected list" had, in Bengal 26 years' service, in Madras 27 years, in Bombay 25 years.

6 Pay.—In the seventeenth century the pay given to the Company's officers was very small, in comparison with that of the present day. The pay of the Surgeon of a Factory was £36 a year, or in rupees worth (then) half a crown each, Rs 988 a year. Small as this rate seems, it was not out of proportion to that of the other officers. The Agent, or Governor, received £100 a year, subsequently raised to £200, plus a gratuity of £100. Factors, or Civilians of some years standing, got £20 to £40 a year, writers, or junior Civilians, £10 yearly. In William Hamilton's time the pay of the Calcutta

* The Medical Department of the British Army was up to 1891, called the Army Medical Department (A M D), from 1891 to 1898 the Medical Staff (M S), since 1898 the Royal Army Medical Corps (R A M C).

Surgeons was still only £26 a year. Money was then, of course, worth much more than it is now, and probably the medical officers made something by private practice, while they also, like all the Company's servants, engaged in private trade. Moreover, free quarters and diet at the Company's table were also given.

Even so late as 1757, the pay of the Calcutta Surgeons was still only £16 a year. And these Surgeons were the senior officers, their assistants, the "hospital mates," got less. An entry in the Public Proceedings of 31st October 1757, shows the two Calcutta Surgeons, George Gray and William Fullerton, as drawing Rs 144 each for half a year's pay. But Broome (History of the Bengal Army, p. 553), in a table showing the monthly pay of each of the ranks of Army Officers in 1756 puts the lowest rate of pay of an Assistant Surgeon doing military duty as Rs 62 per month. Probably medical officers in civil employ were expected to add largely to their incomes either by private practice or by trade. A relic of this higher rate of pay in military than in civil employ is seen in the fact that, to this day, the pay of a Civil Surgeon is lower, by fifty rupees a month, than that of an officer of the same rank serving in a regiment, the difference, and more, being usually made up to the Civil Officer by other allowances.

Broome's table gives the following as the monthly rates of pay, in *Sonant* rupees, for Military Medical Officers in 1756 —

	Surgeon	Asst Surgeon
Pay in garrison at the Presidency	124	62
Half <i>batta</i> in Cantonment	93	62
Field <i>batta</i> within the Curnamassa, or in Cantonment beyond that river	186	124
Double <i>batta</i> in the field beyond the Curnamassa	372	248

Batta (correctly *bhata*), means allowance. The term is applied to an allowance given to troops serving in the field. It is still given, on a lower scale, to troops on active service beyond the frontier. The Curnamassa, or Karumassa, is the river which divides Bihar, south of the Ganges from the United Provinces, formerly the North West Provinces, and was at that time the frontier of the Company's dominions. An officer serving outside the Presidency garrisons, in 1756 received either half, field, or double *batta*, according to where and how he was serving, in addition to his pay, a curious contrast to the modern system of giving to officers stationed in the three Presidency towns "Presidency allowances," on account of the great expense of living there.

In the East India Register of 1813 the following are given as the rates of pay then prevailing —

		Garrison, actual pay	Garrison, with allowances	Field, with allowances
European	Capt. or Surgn	R 120 0 0	R 283 8 0	R 411 0 0
Infantry	Lt or Asst Surgn	70 0 0	169 0 0	254 0 0
Native	Capt. or Surgn	179 6 4	470 6 4	560 6 4
Cavalry	Lt or Asst Surgn	109 5 0	303 8 0	363 9 0
Native	Capt. or Surgn	120 0 0	321 0 0	411 0 0
Infantry	Lt or Asst Surgn	60 0 0	194 0 0	254 0 0

The bulk of the medical officers would naturally be serving with the native infantry. At that time the pay of a General Officer was fixed at Rs 300 a month, but as he also drew an establishment allowance of Rs 4,400 per month in garrison, and Rs 5,000 on service, he did fairly well.

In 1838 we find laid down for medical officers the following rates of consolidated pay, without allowances —

	European Infantry		Native Cavalry		Native Infantry	
	Garrison	Field	Garrison	Field	Garrison	Field
Surgn	R 333 8 0	R 411 0 0	R 520 6 4	R 560 6 4	R 371 0 0	R 411 0 0
Asst Surg	199 0 0	254 0 0	333 8 0	363 8 0	224 0 0	254 0 0

It will be seen that the rate of pay is rather higher in garrison than in 1813, in the field the total amount remains the same, but is given as consolidated pay instead of as pay and allowances.

In 1847 the rates are given as follows, a special rate being shown for Foot Artillery and Engineers. The amounts are again made up of actual pay, plus various allowances, house rent, horse allowance, and rentage, also extra *batta* when in the field. Only the total amounts of pay plus allowances are quoted in the table.

	Foot Artillery and Engineers		Cavalry and Horse Artillery		Infantry, European and Native	
	Garrison	Field	Garrison	Field	Garrison	Field
Surgn	R 392 5 0	R 433 10 0	R 521 11 4	R 563 0 4	R 374 1 0	R 415 6 0
Asst Surg	234 14 0	265 12 0	334 6 0	365 4 0	225 2 0	256 10 0

In the middle of the nineteenth century, between 1850 and 1860, the monthly pay of an Assistant Surgeon, holding a permanent civil appointment, was Rs 300 a month. To this were usually added various other allowances, e.g., at Hughli, the Civil Assistant Surgeon drew Rs 100 for attendance on the staff and students of Hughli College, Rs 30 *pallo* (conveyance) allowance, and Rs 20 vaccination allowance, total, with his pay Rs 450 per month. Private practice was also allowed. Various other allowances have from time to time been sanctioned, and some discontinued. In the sixties, the Civil Surgeon of the same station was drawing Rs 50 per month police allowance, and Rs 50 per month Lock Hospital allowance, while the vaccination allowance had been stopped. The Lock Hospital was closed on 31st December 1870 and of course the allowance then ceased. The allowance for charge of the police hospital had also then been discontinued, this charge falling into the Civil Surgeon's regular duties. On the other hand, from 1st January 1869 Civil Surgeons were made Superintendents of district jails—previously they had been medical officers only in jails, without any separate allowance, as part of their regular duty—the jail charge allowance varying from Rs 50 to Rs 100 a month, according to the number of prisoners confined in the jail. Up to about 1860 Civil Surgeons also frequently held various non-medical appointments in their stations, such as those of Registrar of Deeds, or Postmaster, in addition to their professional work, with extra pay for the extra work.

The memorandum regarding the position of officers appointed to the I.M.S., issued by the India Office, gives the following rates of pay for officers on military duty (Part 16). The last two columns of the table, giving the pay of men in civil employ, is taken from Resolution Nos 361–375, Medical, of 17th April 1905, by the Government of India in the Home Department. The rates shown have been given from 1st October 1903 in

the Military Department, and in the Civil Department from 1st April 1904 —

Rank	MILITARY					CIVIL	
	Unemployed pay	Grade pay	Staff pay	In Off Med Charge of a Regt	In Permanent Med Charge of a Regt	1st Class Civil Surgeon	2nd Class Civil Surgeon
	Rs	Rs	Rs	Rs	Rs	Rs	Rs
Lieutenant	420	350	150	425	500	550	450
Captain	475	400	150	475	550	600	500
Captain after 5 years' service	475	450	150	525	600	650	550
Captain after 7 years' service		500	150	575	650	700	600
Captain after 10 years' service		550	150	625	700	750	650
Major		650	150	725	800	850	750
Major after 15 years' service		750	150	825	900	950	850
Lieut Colonel		900	350	1,075	1,250	1,300	1,200
Lieut Colonel after 25 years		900	400	1,100	1,300	1,350	1,250
Lieut Colonel "selected"		1,000	400	1,200	1,400	1,450	1,350

The rate of pay for a first class Civil Surgeoncy throughout is fifty rupees a month higher than that for the medical charge of a regiment, for a second class Civil Surgeoncy fifty rupees less than a regiment.

(Para 18) Specialist pay at the rate of sixty rupees a month is also granted to officers in military employ below the rank of Lieutenant Colonel who may be appointed to certain posts.

(Para 19) The salaries of other substantive medical appointments in the Civil and Military Departments are consolidated, and vary from 400 to 1,800 Rupees a month.

(Para 23) No officer, however employed, can receive any staff allowance in addition to the pay laid down in para 16 unless he has passed the examination in Hindustani known as the "Lower Standard". The passing of this examination does not of itself bring any increase of pay to an officer, unless appointed to a substantive or officiating charge, but failure to pass disqualifies an officer, even when holding such substantive or officiating charge, from receiving any portion of the staff allowances of the appointment.

The length of service after which an officer may hope to obtain the substantive medical charge of a regiment varies from time to time, with the rates of retirement and promotion, but roughly may be taken as about four to five years. In the Indian Army List of 1st January 1907, the senior officer shown as officiating in a regiment has $4\frac{1}{2}$ years' service, the most junior holding a permanent charge $4\frac{1}{2}$ years. These rates are rather slower than those which prevailed a few years ago, but much quicker than those of 25 years ago. In the cold weather of 1882-83 over fifty junior medical officers were on unemployed pay drawing the munificent sum of Rs 286 a month.

A medical officer, on entering civil employment, begins as an officiating Civil Surgeon, taking the place of a substantive Civil Surgeon absent on leave or deputisation. The period during which he remains officiating before getting a substantive civil appointment varies greatly from time to time, but is seldom less than one year, or more than three years. Necessarily, it depends entirely upon the number of vacancies, by death, promotion, or retirement, which may occur among the Civil Surgeons of the province in which he is serving. An officer who has the substantive medical charge of a regiment, before he enters civil employ, may retain a lien as his substantive regimental appointment for three years, if not confirmed in civil employ before the expiration of that time. On being so confirmed, or on completing three years' absence from his regiment, he is struck off his military appointment.

The number of first class Civil Surgeoncies is not large. In Bengal, before the partition, there were 6 to some 45 Civil Surgeoncies, apparently there are still five. In the U P and Oudh there are 4 out of about 35, in the Panjab 6 out of about 25. They are given by seniority and merit. Except in the Panjab, an officer can hardly hope to attain a first class Civil Surgeoncy under twenty years' service. But while the pay of a second class Civil Surgeon is less than that of an officer of the same length of service in medical charge of a native regiment, the income of the former is almost always larger, sometimes much larger, than that of his contemporary in military employ. Almost every Civil Surgeoncy carries with it some allowance from Government, the charge of a jail at least, if nothing more. And there is always the chance of private practice, some at least in every station, while in each province there are several stations which may still be considered lucrative appointments.

7 *Furlough and Leave* — The grant of furlough and leave is quite a modern idea. The first servants of the E I Co, civil, military, and medical, received no leave to Europe at all. An officer who wished to go home had to resign his appointment and the service, though he might be reappointed and return to India, if he wished it, after his visit home. As he received no pay while absent from duty, and as a passage to or from India cost a very large sum, a visit to Europe was an expensive luxury. A medical officer often escaped the expense of a passage home, by taking a berth as surgeon to a homeward bound Indianman, the surgeon who came out with the ship sometimes receiving an appointment in India in the place of the man who had gone home.

Leave to Europe on sick certificate was first granted by a General Letter from the Court of Directors, dated 10th September 1783, and published in the *Calcutta Gazette* of 25th March 1784. One year in Europe was allowed. The certificate had to be in the handwriting of the principal surgeon, who had also to attest it on oath. Furlough on private affairs only became admissible thirteen years later.

The first furlough rules were published in 1796. By then an officer who had served ten years in India was allowed furlough up to a period of three years. With the long voyage round the Cape, in sailing ships, at least a year would be occupied by the two voyages, going and returning, allowing two years at home. But pay was given only for two and a half years. Extensions of leave might be given for sickness, or other urgent reasons, but failure to return to India within five years involved forfeiture of appointment. Many officers were struck off the service under this rule, which, by the way, is still in force.

Subsequently various modifications were introduced. Officers with less than ten years' service were allowed furlough on medical certificate or leave without pay on urgent private affairs. It gradually became a common practice to take a second furlough after the completion of the full period of Indian service for pension, at the end of which the officer usually retired, though a few returned to India for a third spell of service.

Under the rules of 1796 all leave in India, at the Cape, or anywhere east of the Cape, counted as service for pension. The shorter sea voyage, the climate of the Cape Settlements, and the advantage of the leave counting as service for pension, led to a great many officers availing themselves of this leave.

The furlough rules of 1854 were introduced from the 1st February 1854, and were published, with a few modifications, in a General Order, dated 17th November 1854. A short summary of these rules appears in the East India Registers of 1855 and 1856, and they are printed at full length in that of 1857.

Under these rules one furlough, on private affairs, of two years, was allowed after ten years' service in India, and a second furlough of two years after a second spell of ten years in India. Under no circumstances was

FURLOUGH AND LEAVE REGULATIONS

furlough on private affairs allowed to be cumulative, or to extend to more than two years at one time. But, under a General Order of 16th June 1856, an officer who put in twenty years at duty before taking his first furlough, might take his second spell of two years' furlough after 25 years' service.

Furlough on sick certificate was allowable for not more than eighteen months in the first instance, but might be extended for a period of eighteen months more, or three years in all.

Officers on staff employ were allowed leave on private affairs only up to six months, on sick certificate up to fifteen months, with retention of a lien on their appointments. If they took leave for a longer period, they forfeited their staff appointments. Staff employ included General Officers, the whole army staff, both general and regimental, members of the Medical Board, Superintending Surgeons, and all officers in either civil or political employment.

The necessary subsidiary leave was given both on going and on returning from furlough. All leave except subsidiary leave and privilege leave of one month in six, was counted as furlough, even short periods to see or in India were so counted. This, of course, did away with the former privilege of leave east of the Cape counting as service. [The terms "subsidiary" and "privilege" leave are not used.]

The periods of leave allowed to count as pension were two years in twenty, three in twenty five, and four in thirty. Medical officers only were further allowed to count one year and eight months in seventeen years' service, other officers had to serve for a minimum period of twenty years.

All furlough on private affairs was (and still is) subject to the exigencies of the public service. On this occasion as on subsequent occasions when new furlough rules were introduced, officers then in the service were given the option of retaining the old, or adopting the new rules.

The various furlough regulations subsequently issued were those of 1868, 1875, and the present Indian Army rules of 1886. There is no officer now serving in the I M S who entered previous to 1868. Only ten officers are now serving under the rules of 1868. The rules of 1875 first gave to officers in civil employment the benefit of the civil furlough rules, with their high furlough pay. All officers who have entered subsequent to 1868, are serving under the rules of 1886, but these rules also give the benefit of the civil furlough rules to officers in civil employment.

At present, Medical officers in Civil and Military employ serve under somewhat different leave rules. Those for officers in military employ are given in the India Office Memorandum, paragraphs 25 to 31. They are those of 1886, formerly known as the "Staff Corps rules" and now as Indian Army rules. Leave under these rules is of three kinds—

- (a) Privilege leave,
- (b) Leave out of India (furlough),
- (c) Leave in India, for the period of one year only,

on full military pay, plus half staff salary. Leave out of India may be granted at any time, at the discretion of the military authorities. Only one year may be granted at first, but this may be extended up to two years in all. Leave beyond two years at one time cannot be granted, except on specially urgent grounds, and then without pay. If an officer is unable, on account of ill health, to rejoin at the end of two years, he is transferred to the half pay list.

The pay given to officers in military employ, when on furlough, increases with length of service, and is as follows, having been increased in 1905—

Do	15th	for pension	£250 a year
Do	20th	do	£300 a year
Do	25th	do	" 450 "
		do	" 600 "
		do	" 700 "

Officers who hold substantive civil appointments get the benefit of the Civil leave rules. Under these rules no furlough can be taken till after the completion of eight years' service, when two years can be taken, one year's furlough is earned by every four years' subsequent service. An officer must serve for at least three years, after return from furlough, before he can take furlough again. The maximum absence from duty at one time is two years.

The furlough pay granted under Civil leave rules is half pay of appointment, with a minimum of £500 a year, or full pay, whichever is less. The practical result is that most officers of the rank of Captain in Civil employ draw about £450 a year, the sterling equivalent of their full pay when on furlough, officers of the rank of Major or Lieutenant Colonel draw £500, with the exception of a few of the more fortunate, who hold appointments on high rates of consolidated pay, in whose case half pay may come to more than £500 a year.

Privilege leave is granted both in military and in civil employ. An officer in military employ may take sixty days in a year, all to be taken at one time, but is expected to find some one to do his work, free of expense to the State, while he is absent. In civil employ an officer gets only one month's privilege leave in a year, the State undertakes to provide and pay a substitute, if one is available. There is often much difficulty in providing a substitute, which leads to refusal of leave, but if a substitute can be found, there is no difficulty about payment, which is made by Government as a matter of course.

In both civil and military employ, an officer may accumulate, or give up, his privilege leave by taking none for two years and nine months, when he will have three months due. Three months is the maximum amount of privilege leave, which can be accumulated, or taken at one time. Should an officer take no privilege leave for five or ten years, he still can have only three months due to him. It will be seen that, by accumulating privilege leave up to three months, the military officer loses half his annual privilege leave, the civil officer does not. Privilege leave is given on full pay, but any extra allowances for extra work are lost while on leave, all such allowances being drawn by the officer who actually does the work for which they are given.

By a modification of the Civil leave rules, introduced in 1901, an officer in Civil employ can combine any privilege leave due to him with furlough. Leave thus taken is called "combined leave", the permission of such combination of leave has had the somewhat uncommon effect of being at the same time a reform in the interests of the State, and a boon to individuals. The maximum leave which can be taken at one time still remains two years. But an officer who has three months' privilege leave and two years furlough due to him, by taking two years combined leave, gains the following advantages: the first three months of his leave are on full pay, and count as service in India, and instead of using up all his two years' furlough, he is able to carry on three months of it for use at a future time.

Officers in civil employ may take, once only in their whole service, *special leave* for a period not exceeding six months. This leave is intended to meet cases in which an officer, who is unable to take furlough under the ordinary rules, requires leave on urgent grounds, other than his own ill health, such as the health of his wife or children, family affairs at home, etc. *Special leave* may be taken at any time, if the reason is sufficiently urgent, the rule that an officer, after return from furlough, must put in three years at duty before taking furlough again, does not apply to special leave. It is given on ordinary furlough pay, and may be combined with any privilege leave due, but the total leave may not exceed six months. As this leave is intended to meet special cases of urgency, it is always advisable that an officer, during whose service no such special urgency arises, should, in case he may require to take

it later on, put off taking special leave till almost the end of his service. Consequently many, probably most officers never take it at all.

Furlough on sick certificate can be got at any time, on the recommendation of a medical board, and on ordinary furlough pay, up to two years' absence from duty.

Any officer recalled from furlough or leave of any kind is required to rejoin at once, unless too ill to do so. His passage out is paid by the State, and he can take the rest of his leave as soon as he can be spared from duty, without serving for three years.

Such recall is not common, though all officers of the I M S on furlough have twice been recalled from furlough in the last ten years. The first time in 1897 on account of the campaigns on the North West Frontier, the second time in 1900 on account of the war in China. Recall from leave to duty is usually general, all officers on leave being recalled at once, and is only ordered for urgent reasons, such as war or famine.

Officers of the I M S receive a free passage to India on first joining, but have to pay for their own passages home and out again on going on furlough. The only exceptions are that a Lieutenant going home on sick leave is provided with a free passage home, while an officer recalled from furlough is provided with a free passage out.

Under the orders contained in Government of India Military Department Notification No 1047 of 23rd October 1903, study leave may be granted to the extent of one month for each complete year's service, up to a maximum of twelve months. This leave is treated as extra furlough, and counts as service in India. Officers on study leave receive ordinary furlough pay, with lodging allowance of 4, 6, and 8 shillings a day in addition, for Lieutenants, Captains, and Field Officers, respectively. They retain a lien on their Indian appointments.

(To be continued)

Service Notes

IN supercession of the rules contained in Military Department Notification No 891 of 1905, the following regulations for the grant of study leave to officers of the Indian Medical Service are published for information (*Gazette of India*, 16th March 1907) —

1 Extra furlough for the purpose of study may be granted to officers of the Indian Medical Service on the recommendation of the Director General, Indian Medical Service.

2 The period of such study leave will be calculated at the rate of one month for each year of service, up to a total of 12 months in all, during an officer's service.

3 Study leave may be taken at any time, but will not be granted more than twice in the course of an officer's service.

4 The minimum period of study which will render an officer eligible for study leave shall be two months.

5 The minimum period of leave granted solely as study leave shall be six months. Time spent on the journey to and from India by an officer whose study leave is not combined with any other kind of leave, will reckon as study leave, but the allowance specified in Rule 10 will be granted during the period of study only.

6 Study leave can be combined with any other kind of leave provided the period occupied in study is not less than two months and, in the case of leave on medical certificate, provided that the medical board at the India Office certifies that the officer is fit for study. In the case, however, of officers in military employment, study leave cannot be taken in continuation of the combined privilege leave and furlough admissible under the terms of India Army Order No 64 of 1904, if the total period would thereby exceed eight months, but study leave may be so taken provided such leave is for not less than two months and the total period of combined privilege leave, furlough and study leave does not exceed eight months, this limitation to eight months does not, however, apply in the case of study leave combined with privilege leave alone. The total period of absence from India, in the case of officers under the Leave Rules of 1886 for the Indian Army, will be strictly limited to two years.

7 Except as provided for in Rule 8 all applications for study leave shall be submitted, with the audit officer's certificate to the Director General, Indian Medical Service, through the prescribed channel, and the course or courses of study contemplated and any examination the candidate proposes to undergo shall be clearly specified therein.

8 Officers on furlough who wish to have part of their furlough converted into study leave should address the Under Secretary of State, India Office and should furnish a statement showing how it is proposed to spend the study leave.

9 An officer who is at home on combined leave may be permitted to commence a course of study before the end of his privilege leave, and to count the period so spent as part of his study leave, without forfeiting his privilege leave allowances during such period.

10 During the course of study lodging allowance at the rate of 8s a day for a field officer, 6s for a Captain, and 4s for a Lieutenant will be granted. It is to be understood that in order to qualify for the grant of study leave or for the receipt of lodging allowance, a definite course of study at a recognised institution, which will occupy the time of the officer for five or six days a week, must be pursued. This allowance will not be admissible to an officer who returns from the service without returning to duty in India after a period of study leave.

11 An officer in civil employ will be entitled to draw furlough pay at civil rates for a portion of his study leave equal to one twelfth of his service under civil rules and for the remainder either (1) at the military rate, or (2) if furlough is due to him under civil rules, at the rate admissible under those rules, in the latter case a corresponding portion of the ordinary furlough earned under civil rules which is at his credit will be treated as if it had been earned under military rules.

12 On completion of study the certificates of examinations passed, or the certificates of special study, which must show the dates of commencement and termination of the course, with any remarks by the instructor, shall be forwarded to the Under Secretary of State, India Office, who will arrange for the transmission of the documents to the Director General, Indian Medical Service. Officers may also be called upon to report themselves in person to the President of the Medical Board, India Office, on the conclusion of their course of study.

13 Study leave will count as service for promotion and pension, but, except so far as it may be taken during privilege leave (see Rule 9), it will not count for furlough or any other leave. It will not affect any leave which may already be due to an officer and will not be taken into account in reckoning the aggregate amount of furlough taken by an officer towards the maximum period of six years admissible under Article 299 of the Civil Service Regulations.

MAJOR A W T BUIST, I M S, has got combined leave for eight and a half months from 11th March 1907.

MAJOR H HERBERT, F R C S, I M S, is granted, from the date of relief, such privilege leave as may be due to him on that date in combination with special leave on urgent private affairs for such period as may bring the combined period of absence up to six months.

LIEUTENANT COLONEL J P BARRY, M B, I M S, is granted, from the date of relief, such privilege leave as may be due to him on that date in combination with furlough for such period as may bring the combined period of absence up to six months.

LIEUTENANT COLONEL G F A HARRIS M D, F R C P, I M S (Bengal), Professor of Materia Medica, Medical College, Calcutta, and *ex officio* second Physician to the College Hospital, is granted privilege leave for two months and thirteen days with furlough out of India for five months and seventeen days in continuation, with effect from the 4th April 1907.

LIEUTENANT COLONEL F J DRURY, M B, I M S (Bengal) Civil Surgeon, Howrah, is appointed to officiate as Principal Medical College Hospital, Calcutta, and Lieutenant Colonel Lukis, M D, granted sick leave.

The services of Captain W S J Shaw, M B, I M S, are placed temporarily at the disposal of the Government of Burma for employment in the Alienists Department.

The services of Captain F V O Beit, M B, I M S, are placed permanently at the disposal of the Government of Burma.

MAJOR J T CALVERT, M B (Lond), M R C P, on return from two years' furlough and study leave, was posted as Civil Surgeon to Howrah, *vice* Lieutenant Colonel F J Drury, I M S.

LIEUTENANT COLONEL F S PECK, I M S (Bengal), Professor of Midwifery, Medical College, and Obstetric Physician and Surgeon, Eden Hospital, Calcutta, was granted privilege leave for three months, with furlough out of India on private affairs for four months in continuation, with effect from the 13th April 1907

LIEUTENANT COLONEL C R M GREFF, F R C S, I M S (Bengal), was appointed to officiate as Professor of Midwifery, Medical College, and Obstetric Physician and Surgeon, Eden Hospital, Calcutta, during the absence on leave of Lieutenant-Colonel F S Peck, I M S (Bengal), on until further orders. Lieutenant Colonel Green returned from furlough early in April

THE services of Major C Thompson, M B, I M S (Bengal), are replaced at the disposal of His Excellency the Commander in Chief in India

THE services of the undermentioned officers are placed permanently at the disposal of the Government of the United Provinces —

- 1 Captain E J O'Meara F R C S, I M S
- 2 Captain W S Willmore, I M S

CAITAIN A T GAGE M B, I M S, having become Director, Botanical Survey of India, in succession to Lieutenant Colonel D Prin G R S, I M S, now of Kew, is also appointed a Trustee of the Indian Museum, Calcutta

CAPTAIN H B LVAID, M B, I M S, has been transferred to the permanent half pay list, with effect from 15th March 1907. Captain Lvaud entered the Service in March 1890, and has been on the temporary half pay list since 15th March 1901

THREE are at present one Major, two Captains and one Lieutenant, I M S, on the temporary half pay list

MAJOR L G FISCHER, I M S Civil Surgeon, Dehra Dun, was granted privilege leave, combined with furlough, for a total period of one year and seven months, from the 1st April 1907

CAPTAIN G HUTCHISON, I M S, Civil Surgeon, Bijnor, was granted privilege leave, combined with furlough, for a total period of eighteen months, from the 1st April 1907, on any subsequent date

CIVIL Assistant Surgeon Nil Ratan Banerji, attached to the Sadi Dispensary, Cawnpore, to hold civil medical charge of the Pilibhit district, vice Military Assistant Surgeon W J A Hogan, I S M D, transferred

CAPTAIN W M PEARSON, I M S, Officiating Deputy Sanitary Commissioner, 2nd Circle, to officiate as Civil Surgeon, Bijnor, vice Captain G Hutcheson, I M S, granted leave

CAPTAIN R F BAIRD, I M S, Officiating Civil Surgeon, on completion of his special duties, has been posted to Azamgarh

LIEUTENANT COLONEL C C MANHOOD, I M S, has been transferred as Civil Surgeon from Jhansi to Dehra Dun

DR H A MACFARLANE is transferred as Civil Surgeon from Mozuffernagar to Basti, U P

MILITARY ASSISTANT SURGEON W J A HOGAN, is transferred as Civil Surgeon from Pilibhit to Mozuffernagar

DR M DASS, Civil Surgeon of Hamirpur, U P, has been granted six months' combined leave

CONSEQUENT on the deputation of Lieutenant Colonel J F MacLaren, I M S, Lieutenant-Colonel G A Emerson, Officiating Civil Surgeon, 2nd class, to officiate as Civil Surgeon, 1st class

CONSEQUENT on the return from leave of Lieutenant Budrum are replaced at the disposal of the Government of India Home Department, with effect from the date on which he may relinquish charge of his present duties

LIEUTENANT COLONEL J SIKES, I M S, Civil Surgeon of Bareilly, was appointed to hold visiting charge of Budaon, vice Major C Thompson, I M S

MAJOR J JACKSON, M B, I M S, Superintendent, Central Prison, Yeravda, is granted, with effect from the date of relief

such privilege leave as may be due to him on that date in combination with furlough for such period as may bring the combined period of absence up to one year

THE Governor in Council is pleased to appoint Captain H J R Twigg, M B, I M S, on return to duty to act as Superintendent, Central Prison, Yeravda, during the absence on leave of Major Jackson, on pending further orders

IT is understood that on his return from furlough Major J Jackson will succeed Mr Alexander as Inspector General of Prisons, Bombay

LIEUTENANT COLONEL FRENCH MULLEN, I M S, is promoted Colonel, and his services placed at the disposal of H E the Commander in Chief, with effect from 25th March 1907

THE services of Captain S A Ruzzak, I M S, are placed temporarily at the disposal of the Government of Madras

THE services of Captain S Bose, M B, I M S are placed permanently at the disposal of the Government of Madras

THE services of Major R Bnd, M D, F R C S, C I E, I M S (Bengal), officiating Professor of Surgery, Medical College, Calcutta, and *ex officio* Surgeon to the College Hospital, were placed temporarily at the disposal of the Foreign Department, with effect from the 22nd December 1906, for service with H M the Amir

THE services of Civil Assistant Surgeon Maulvi Saiyid Muhammad Afzal, Teacher of Anatomy and Surgery, Temple Medical School, Patna, are placed temporarily at the disposal of the Foreign Department, with effect from the 15th December 1906

THE services of Captain A C MacGilchrist, M B, I M S, are replaced at the disposal of the Government of Bengal, and has been posted to Purnea as Civil Surgeon

CAPTAIN A C MACGILCHRIST, M B, I M S, whose services have been replaced at the disposal of the Government of Bengal by the Home Department notification No 357, dated the 8th March 1907, was employed under the Government of Eastern Bengal and Assam, from the 16th October 1905, until the date on which he was relieved of his duties in that province in order that he might join the appointment of the Sanitary and Medical Officer to the Government of India in the Statistical Department

MILITARY ASSISTANT SURGEON J ROBERTSON, I S M D, is appointed to be Civil Surgeon of Yeotmal, C P, vice Mont gomery, on leave

CAPTAIN F A L HAMMOND, I M S, goes on leave Captain W S Crosthwaite, R A M C, was given collateral charge of the Civil Surgeoncy of Thajetmyo

CAPTAIN D N ANDERSON, I M S, an officiating Civil Surgeon, C P, was granted one year's furlough (m c) from 1st July 1906, under Art 358, A R I, Vol 1. This cancels notifications, dated 21st January 1907

CAPTAIN L COOK, I M S, and Captain F Power Connors, I M S, F R C S, were in March posted for special plague duty in Bihar

MILITARY ASSISTANT SURGEON J I' CURRAN, I M S, is appointed to be a Civil Surgeon, vice Honorary Captain T Kiddle, I S M D, retired

DR F A FOY, M B, has been granted three months' extension of leave (m c) by the Secretary of State

WE regret to learn that ill health has compelled Major C Duer, I M S, to take an extension of leave, and it is possible he may not be able to return to Rangoon. He took two years' leave out of India in February 1905

THE following have been appointed to be Lieutenants, I M S, dated 1st September, 1906 —

- John Taylor, M B
- Alexander Drom Stewart, M B
- Claude Harold Cross
- Robert Alexander Chambers, M B
- Robert Henry Bott, F R C S
- John Morison, M B
- Samuel George Steel Houghton, M B
- Francis William Cragg, M B
- Norman Niel George Cowan McVean
- Norman Skinner Simpson

Shumshere Singh
Robert Francis Hebbert
Joseph Frun James, M B
James Smalley, M B
Charles Michael Roberts, M B
Andrew Smith Leslie, M B
William Malcolm Thomson, M B
Alexander Patrick Gordon Loumer, M B
Herbert Bodley Scott
George McGregor Millar, M B
Hubert Astley Knight, M B
Francis Hugh Schisbuiy, M B
Frederick Charles Fraser, M D
Harold Hay Thorburn, M B

SIR R HAVELOCK CHARLES, FRCSI, KCVO, IMS, introduces the subject of diabetes in Indians at the Tropical section of the British Medical Association to be held in the end of July next

CAPTAIN A LEVFINTON, IMS, a Civil Surgeon, E B & A, has taken, "with honours," the diploma of D P H, of the Irish conjoint Board

CAPTAIN O ST J MOSLS, IMS, has gone to Bursul as Civil Surgeon, *vice* Captain H Innes, IMS, gone on furlough

LIEUTENANT COLONEL W A LFE, IMS, was due back from furlough on 4th May 1907

LIEUTENANT COLONEL W B BROWNING, IMS, Principal, Medical College, Madras, is also President of the Board of Examiners at the College

MAJOR F J CRAWFORD, IMS, was to go on furlough on 1st May for eight months

MAJOR W MOLFSWORTH, IMS, Surgeon to H E the Governor of Madras, was granted eight months combined leave from 5th March 1907

MAJOR C H L PALK, IMS, has obtained two years' combined leave, and is not due back till January 1909

CAPTAIN W J NIBLOCK, IMS, applied for two months' further extension of leave, *ie*, up to end of October 1907

CAPTAIN C B HARRISON, IMS, has obtained two years' combined leave from March 1907

CAPTAIN I S ROSS, IMS, has obtained ten months' combined leave, on or after 12th April 1907

CAPTAIN F D S FAYRER, IMS, is due back on 22nd June 1907

CAPTAIN P L O'NEILL, IMS, has applied for eight months' combined leave

CAPTAIN F C ROGERS, IMS, has obtained sixteen months' furlough and study leave, and is not due back till June 1908

CAPTAIN J H HUGO, DSO, IMS, M B (Lond), has taken the D P H of the Royal Colleges, London, as has also Captain S P James, IMS, M D (Lond)

MAJOR S A HARRIS, IMS, and Major J B Smith, IMS, have passed the examination of the London School of Tropical Medicine

CAPTAIN H J R TWIGG, IMS, was granted three months' privilege leave from 28th February, and Lieutenant J Anderson, IMS, was to act as Superintendent, Central Prison, Hyderabad, Sind

HONORARY CAPTAIN A H NOLAN, ISMD, Civil Surgeon, Prome, was granted six weeks' privilege leave from 1st February

LIEUTENANT C A OWEN, ISMD, officiating Civil Surgeon, Shahpur, has obtained privilege leave of absence for three months, combined with furlough for one year, under Articles 260 233 and 606, note (2), of the Civil Service Regulations, with effect from the date on which he may be relieved of his duties

In continuation of notification No 964, dated the 7th of November 1906, Major E Wilkinson, IMS, Deputy Sanitary Commissioner, Punjab, has been further permitted by His Majesty's Secretary of State for India to convert the period

from the 10th of October to the 10th of November 1906 of the furlough granted to him in notification No 137, dated the 14th of February 1905, into "study leave"

CAPTAIN M B PINCHARD, IMS, has been granted six months' extension of leave on medical certificate

CAPTAIN L HIRSCH, IMS, has been appointed Civil Surgeon in the Khyber Agency

CAPTAIN H M H MELHUISH, IMS, is appointed to the officiating medical charge of 9th Gurkha Rifles, *vice* Captain G D Franklin, IMS, gone to Civil employ

MAJOR W YOUNG, IMS, was on study leave from 4th December 1905 till 15th May 1906

MAJOR A L DUKE, IMS (Bengal), an Agency Surgeon of the 2nd Class, is granted privilege leave for three months combined with furlough for six months and study leave for one year, with effect from the 11th March 1907, under Articles 233 and 303(b) of the Civil Service Regulations and Rule 6 of the Resolution by the Government of India in the Military Department, No 891, dated the 13th October 1905

THE services of Major P I Kilkelly, IMS (Bombay), an Agency Surgeon of the 2nd class, are replaced at the disposal of the Home Department with effect from the date on which he returns from leave

THE services of Major R Bird, CIP, IMS (Bengal), Professor of Surgery, Medical College, Calcutta, and *ex officio* Surgeon to the College Hospital, are replaced at the disposal of the Home Department, with effect from the forenoon of the 11th March 1907. On the completion of his duty with H M the Amir of Afghanistan, Major Bird returned to Calcutta, and Major F O'Kienery, IMS, who had acted as Professor of Surgery, returned to Darjeeling. Captain Clayton Lane, M D, IMS, went from Darjeeling to Monghyr and relieved Captain E O Thurston, FRCS, IMS, who has gone on leave to England

CAPTAIN E B KNOX, M D RAMC Secretary to the Principal Medical Officer, His Majesty's Forces in India, has gone on 8 months' leave on private affairs, under Army Regulations, India, Volume II, paragraph 226 the first 90 days on privilege leave

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

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BOOKS, REPORTS, &c, RECEIVED—

Savage's Bacterial Examination of Water Supplies (H K Lewis)
Gopal's Prescriber, Kaiser i Hind Press, Delhi (In Urdu)
Von Noorden's Text book of Metabolism 2 vols (Helmensman & Co)
Kraus & Mendel's Text book of Psychiatry (F A Davis & Co)
Röntgen Rays in Medical Practice, Walsh & Jones (Baillière, Tindall & Cox)
Antiseptic Methods H Upcott (Baillière, Tindall & Cox)
Undulant Fever in S Africa Strachan (Reprint)
The Nurling, Budin, and Bullock (Caxton Press)
Intusception F J Pentland
Allbutt's System of Medicine Vol II, parts I and II

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM—

Major Heard, IMS Simla, Capt McCay, IMS, Calcutta, Capt Moses IMS, Barisal, Capt Gidney, IMS, Dhubri Major Barry, IMS, Rangoon, Capt Dec, IMS, Bassein Messrs Preacher & Co Bombay Capt Symons IMS, Madras, Lt Col Adle IMS, Ferozepore Lt Col Crawford IMS, Hughli, Capt Brodribb, IMS, Jhansi, Lt Renney, IMS, Dr Balm, Aurangabad Dr N Cook, Calcutta, Capt O Lane, IMS, Monghyr Capt L B Scott, IMS, Silchar

Original Articles.

A PRELIMINARY NOTE ON THE APPLICATION OF VACCINO THERAPY TO DYSENTERY

By W. H. C. FORSTER, M.B., C.M. (EDIN.),
D.P.H. (CANTAB),

CAPT., I.M.S.

(On special duty under the Sanitary Commissioner with
the Govt. of India)

PRELIMINARY STATEMENTS

1 All statements made in this note are made on my own responsibility, and except where otherwise stated are based on my own researches

2 A full and detailed consideration of all the issues raised in this note will be incorporated in my final report to the Sanitary Commissioner with the Government of India

3 The principal object of this note is to obtain clinical material, and I shall be glad to receive communications from medical officers having suitable cases under their care

THE ÆTIOLOGICAL ASPECT

The ætiology of dysentery is at present only imperfectly understood, but the following classification includes most of the current ideas on the subject

Bacillary dysentery—Includes all cases in which any of the dysentery group of bacilli are found in the stools

Amœbic dysentery—Includes all cases in which amœbæ are found in the stools

Parasitic dysentery—Includes all cases in which the symptoms are due to the presence of intestinal parasites

Drug dysentery—Includes all cases in which the symptoms are induced by drugs, such as mercury

Malarial dysentery—A form of dysentery said to occur by some writers

Idiopathic dysentery—Includes all cases which cannot be included under any of the foregoing headings and which are commonly attributed to such causes as chills, faulty dietetics, etc

For the purposes of this note it will only be necessary to consider bacillary dysentery. According to Hiss there are at least four well-defined groups of dysentery bacilli, and as my own observations are closely in accord with those of Hiss, I shall adopt his classification which is as follows—

Group 1	Type	"Shiga"
" 2	"	"Y Bacillus"
" 3	"	"Strong"
" 4	"	"Flexner (Gray or Harris)"

Up to date I have found cases of chronic bacillary dysentery to be associated with Groups 1, 2

and 4. In any case of chronic bacillary dysentery the ideal course would be to first isolate the causal organism and then, after the customary identification tests, to prepare from it a vaccine with which to treat the patient. Under the most favourable circumstances this would be a lengthy and complicated process and would only be applicable to a very small fraction of the cases which occur in India. The alternative method of keeping on hand stock vaccines of all four groups would not relieve us of the necessity for ascertaining in each case what particular group was concerned. Until we are in possession of some simple and comparatively certain test which will enable the physician to ascertain for himself what particular type of organism is the cause of the chronic dysentery which he has to treat, theoretical requirements will only be fulfilled in those cases which come within the cognizance of a skilled bacteriologist with a properly equipped laboratory at his disposal. Gay's work on an anti-serum for B. Shiga has indicated a possible and simple solution of the difficulty. He found that this serum was protective against Group 4 (Flexner), and so it is possible that a vaccine prepared from group 1 (Shiga) may prove to be of therapeutic value in all cases of chronic bacillary dysentery. This possibility is now being made the subject of direct experiment.

With regard to amœbic dysentery, some points are worthy of consideration from the point of view of vaccino-therapy. In the first place, my own observations, so far as they go, would seem to indicate that acute amœbic dysentery is a rare disease, whilst, on the other hand, chronic dysentery associated with the presence of amœbæ in the stools is comparatively common. In the second place, I have not yet succeeded in isolating any of the dysentery group of bacilli from chronic cases of dysentery associated with the presence of amœbæ in the stools. It is therefore within the bounds of possibility that some of the cases of chronic amœbic dysentery may have been originally of a bacillary nature, the amœbic infection being secondary. To continue the argument, it is possible that an antagonism may exist between the amœbæ and the dysentery bacilli as the result of which the latter are killed off. Finally, we have the possibility of treating amœbic dysentery successfully with a bacillary vaccine. All this is admittedly pure speculation, but on the other hand, speculation is necessary to advance. So far I have only been able to test the validity of these speculations in one case—Case 3. An isolated case does not go far towards establishing or refuting a proposition, and all I claim for Case 3 is that the result justifies a continuation of this line of treatment.

THE CLINICAL ASPECT

Clinically dysentery may be classified in many different ways, but for the purposes of

vaccino-therapy the following classification will be found to have some merits —

Class 1 —Cases of acutedysentery which come under the care of the physician from the outset These cases may be subdivided into—

A Gangrenous cases

B Non-gangrenous cases

The non-gangrenous cases may be further subdivided as follows —

1 Cases which clear up within seven days under ordinary treatment In native practice these cases are very numerous

2 Cases which slowly clear up in three weeks or a month

3 Cases which become chronic

4 Cases which terminate fatally within ten days to three weeks from the onset

Class 2 —Cases of chronic dysentery which come under the care of the physician late in the course of the disease These cases may be further subdivided into—

A Cases of weeks or months duration and in which the patient is still passing dysenteric motions continuously or intermittently

B Cases of years' duration and in which the patient has ceased to pass dysenteric motions —

In these cases the symptoms usually consist of flatulent diarrhoea accompanied by abdominal pain of a peculiar type Palpable induration of the whole or a part of the large intestine may or may not be present

From the point of view of vaccino-therapy the following classes of cases are suitable for treatment

Class 1 —Non-gangrenous cases which have resisted treatment for seven days and in which the patient is not obviously moribund As a rule vaccino-therapy will not be indicated in gangrenous cases

Class 2 —Sub-classes A and B

In all these classes of cases we are faced with the ætiological difficulty This requires a little notice As previously stated, chronic dysentery has been found by me to be associated with groups 1, 2 and 4 of the dysentery bacilli and also with amœbæ At present the possibility of successfully treating all forms of bacillary and amœbic dysentery with a vaccine prepared from B Shiga is being tested If this should prove to be possible, then ætiological considerations will not trouble the physician If, on the other hand, it should be found that only cases of a bacillary nature can be successfully treated by vaccino-therapy, and if further it be found that each case requires to be treated with a vaccine prepared from the particular group of dysentery bacilli concerned, then ætiological considerations will be of primary importance In this case the microscope will be sufficient to differentiate the amœbic cases In order to enable the physician to rapidly ascertain in the bacillary cases what particular group is concerned, some new and simple test will have to

be devised In view of possible eventualities, observations and experiments are being conducted to this end I have stated that cases of class 2 (B) are suitable for vaccino-therapy, and this statement requires some explanation In a proportion of these cases the symptoms are due to a chronic ulceration of the bowel not necessarily associated with the presence of the causal agents of dysentery Whatever the reason may be, these ulcers are of an indolent type and show but little tendency to heal Now, experiment has shown that the toxin of B Shiga, when injected subcutaneously, has a selective site of excretion, viz, the large intestine In rabbits by varying the quantity injected all effects from hyperæmia to gangrene can be produced It therefore seemed possible by administering suitable quantities of this toxin to produce on these indolent ulcers an effect comparable to that produced by the stimulating lotions of the surgeon on purely superficial ulcers

Cases 4 and 5 are illustrative of the results obtainable by this method of treatment Considerable care must be exercised in the selection of cases of this class for treatment as obviously no good result can be obtained in cases where the bowel is so extensively damaged as to render hopeless medical treatment of any sort

CASES TREATED

Class 2 (A)

Case 1 —C P, native, æt 40, admitted to hospital five weeks previously with acute dysentery

Present condition —Six dysenteric motions by day and four by night

Previous treatment —Mag Sulph, Izal, and Liq Hydrag Perchlor

Bacteriological examination of the stools — No examination

Patient was inoculated with the stock Shiga vaccine Four days after the inoculation his condition began to improve, and three weeks after the inoculation he was reported to be passing perfectly normal stools

CASE TREATED AND RECORDED BY SELF

Case 2 —Native policeman, æt 22 On admission to hospital stated that for twelve days previously he had been passing frequent motions consisting chiefly of blood and mucus and accompanied by considerable tenesmus

Previous treatment —Had been treated by native hakims

Present condition —Kept under observation in hospital for three days without treatment During the period of observation he passed per diem from four to six watery motions with quantities of blood-streaked mucus Tenesmus present

On the fourth day he was inoculated with the stock Shiga vaccine Three days after the inoculation he passed a normal motion without

pain Six days after the inoculation he was discharged from hospital

CASE TREATED AND RECORDED BY CAPT M CORRY, I.M.S.

Case 3—X, Staff Officer, *et* 35 Eight months previously had an acute attack of dysentery preceded by a week's continuous fever. Since then has never passed a motion free from shme and at intervals has had acute relapses. Throughout the whole of his illness the sigmoid flexure has been thickened and tender. Had a constant feeling of weight and tenderness in the region of the sigmoid.

Horse exercise always exacerbated his condition and had to be given up in consequence. The case was referred to me by the Staff Surgeon with a statement to the effect that amœbæ had been found in the stools.

Previous treatment—Mag Sulph, Ipecacuanha in large doses, change of climate, diet, etc. *Present condition*—Patient has just concluded a course of Ipecacuanha. Kept under observation for two days. Passed semi-solid motions with a small quantity of blood-streaked mucus. Sigmoid thickened and tender. Complains of a constant feeling of weight and tenderness in the region of the sigmoid. Bacteriological examination of the stools. No dysentery bacilli were isolated. The entamœba histolytica was present.

The possibility of a satisfactory cure being effected by the use of a bacillary vaccine was explained to the patient, who at once expressed his willingness to undergo the treatment. He was given in all three inoculations with the stock Shiga vaccine, the second and third inoculations being given at intervals of twenty-one and fourteen days respectively. On the fourth day after the first inoculation the patient experienced a feeling of well-being, and on the ninth day passed a normal motion free from mucus. He then returned to duty. Eighteen days after the first inoculation he exercised a very restive horse and in consequence was thrown about in the saddle. Next day he had a slight relapse passing about an ounce of mucus in each motion with a feeling of weight and tenderness over the sigmoid. His condition was the same when he was again inoculated on the twenty-first day. Three days after the second inoculation the mucus disappeared. For two months now he has enjoyed perfect health and is able to do a hard day's riding without any inconvenience. The old feeling of weight and tenderness in the region of the sigmoid has entirely vanished and the stools are perfectly normal.

CASE TREATED AND RECORDED BY SELF

Class 2 (B)

Case 4—I S, native barrister, *et* 35 Contracted dysentery eight years ago which became

chronic and resisted all treatment. Has passed no blood or mucus for the last eighteen months. Complained of alternate constipation and diarrhoea, the latter being of a flatulent type. The motions are accompanied by a burning pain in the sigmoid and this pain may last for days without intermission.

Previous treatment—Has been through the whole gamut of European and native medicines. *Bacteriological examination of the stools*—No dysentery bacilli and no amœbæ were found.

Present condition—Flatulent diarrhoea with burning pain, the sigmoid thickened but not tender.

Patient received two inoculations with the stock Shiga vaccine. Patient slowly improved and has now for a month passed normal motions without any pain or inconvenience.

CASE TREATED AND RECORDED BY SELF

Case 5—T, English lady. Contracted dysentery when travelling in the East five years ago. The disease resisted all treatment. For two years has had no blood or mucus in the stools, but has had continuous flatulent diarrhoea averaging about four motions per diem with a dull dragging pain in the region of the sigmoid. This pain would sometimes last for days without intermission.

Previous treatment—Practically all known methods of treatment have been tried without success.

Bacteriological examination of the stools—No dysentery bacilli and no amœbæ were found.

Present condition—Flatulent diarrhoea with dull dragging pain in the region of the sigmoid. Sigmoid thickened and tender to touch. Patient thin, wasted and incapable of any exertion. The patient, who is still under treatment, has so far received three inoculations. A fortnight after the first inoculation the patient began to improve. The number of motions decreased and the pain in the sigmoid gradually disappeared. Since then recovery has been uninterrupted. At present the patient passes one semi-solid motion per diem without flatulence or pain in the sigmoid. She has put on weight. Feels very well, and is able to take horse exercise and indulge in outdoor pursuits. There is now no tenderness over the sigmoid and the induration can hardly be felt.

THE VACCINE

Nature—The vaccine consists of a dead emulsion of B Shiga in normal salt solution to which 0.5 per cent of carbolic acid has been added. The emulsion is prepared from 24 hour agar slope cultures, and is killed by heating to 60–63° C in a water bath for twenty minutes.

Site of inoculation—The vaccine is injected subcutaneously in line with the outer border of the rectus muscle half an inch above the umbilicus.

Local effects—About three hours after the inoculation the patient feels a little stiffness at the site of the inoculation and this gradually becomes more pronounced. After 24 hours the site of inoculation is tender to touch and the patient stoops cautiously. The tenderness gradually passes off during the next 24 hours. There is never any enlargement of the lymphatic glands and the local inconvenience has never yet prevented any of the chronic cases from carrying out their vocations as usual.

General effects—No fever, headache, prostration, or malaise have, as yet, been observed to follow the use of this vaccine. A description of the blood changes following inoculation will be given later.

Interspacing of doses—This varies greatly with the class of case. In chronic cases where the patient is still passing dysenteric motions an interval of fourteen days between doses will, as a rule, fulfil all requirements. The opsonic index is a useful guide if it can be made use of. In those cases in which there are no active symptoms of the disease no general rule can be given. The treatment is necessarily protracted, and in my experience one is reduced to giving an inoculation when occasion offers.

SUMMARY

1. A vaccine can be prepared from B Shiga which, in therapeutic doses, gives rise to no greater discomfort than a little local tenderness.

2. The possibility of successfully treating all cases of chronic dysentery and chronic diarrhoea, the result of chronic dysentery with a vaccine prepared from B Shiga, is being tested.

3. The number of cases treated is as yet too small to admit of any but tentative deductions being made.

SMALL INCINERATORS

By H. A. HAINES,

LT COL, R A M C.,

Ambala

WITH reference to Surgeon-General Hamilton's article in your April number (page 151), on small incinerators, it may be of interest to your readers to give a brief account of the details, working, etc. The principle shortly is that the rubbish and sweepings which were previously removed as waste are here utilized as fuel for the combustion of the solid and for the boiling of the liquid sewage. By straining the latter through a quantity of dry leaves or stable litter, etc., the amount of solids it contains is largely reduced. I append a photograph of the most recent incinerator erected which is also the cheapest, costing only Rs 8 to put up. The bricks, numbering about 1,500, were "collected" from military works debris and old drains, etc., they were built together with mud plaster

by a dhooli bearer for a *balsheesh* of 8 annas included in the Rs 8 leaving Rs 7-8 for the iron work, consisting of door, boiler, and grating, the latter is formed of loose iron bars 1 inch diameter and 22 inches long, resting on a ledge inside, 18 inches above the ground. They are placed 1 inch apart, thus forming the floor of the charge space. The 12 bars cost Rs 6-8, the boiler is an old carbolic acid drum supplied with a cover and discharge pipe at a cost of Re 1, it rests partly on the grating, and is partly built into the wall, the brickwork above is carried on as a dome and ends in a chimney of about 6 feet height, in one side of the dome is an opening closed by a glass door hinged on the upper edge; this cost so little that the Military Works Department would not charge for it.

As may be seen from the photograph, the incinerator is built up against the back wall of the latrine, the space around is enclosed with a 6-inch mud wall, and the whole surface "leaped" with the following mixture which is also used on all earthen floored latrines, etc.—

One part crude Kerosene oil + four per cent crude carbolic acid

One part Coal tar

Four parts Mud

Cowdung is unnecessary, the incinerator itself is leaped the same way or may be whitewashed to look neater.

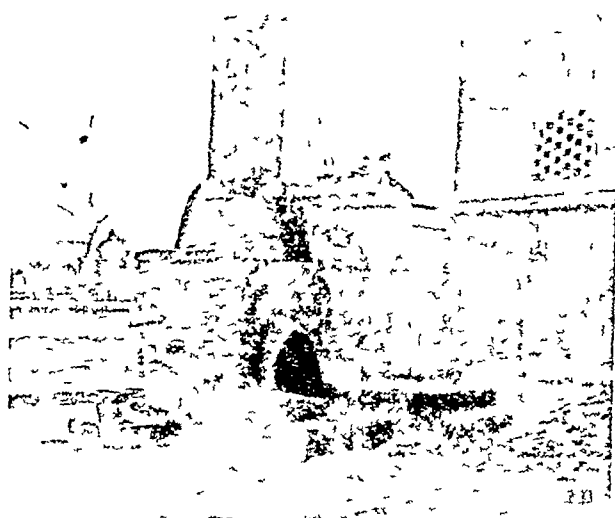
The *modus operandi* is as follows—The latrine *gumlah* or commode pan before use is anointed with kerosene and carbolic acid and then filled to a depth of 2 inches with sawdust, the latter is not essential but facilitates working and aids in combustion. When used, the whole of the contents are as a rule dry enough to be tipped straight into the charge chamber of the incinerator and is then done with. If, however, there is any quantity of liquid in it the sweeper takes it to the strainer which is simply a perforated tray or sieve standing on a tub. This tray has a layer of leaves or other dry rubbish, 3 or 4 inches deep in it, and a very slight amount of mixing, done with a bit of scap-nion, is sufficient to render it fit for transfer to the incinerator. The liquid which has run through is then poured into the boiler. Urine bottles are emptied direct into the boiler, thus saving a lot of handling, bedpans also are emptied direct into the incinerator, bottles and bedpans are then immediately washed in carbolic lotion.

For enteric and other patients in bed this appears to me to be the minimum of handling of vessels.

The fire below is started with 20 seers of firewood and kept going with the sweepings of the compound, stable litter, etc. The charge chamber is never touched, the ash falling down itself, and is but small in quantity. When the fire is well started, it burns away itself with little attention for hours, the boiler having only a capacity of 12 gallons has to be refilled once or twice,

but it boils over in less than two hours. The ash and boiled liquid is used in the garden, two or three ordinary flower beds of loosened earth are used alternately and are absorbent for weeks, forming a very rich manure like guano.

The running expenses for about 200 people with three incinerators in different compounds were as below.



	Rs	As	P
Firewood 45 maunds at 3 maunds per rupee	15	0	0
Sawdust 20 maunds at 4 maunds per rupee	5	0	0
Repairs, say ...	1	0	0 per mensem.
Total per mensem	21	0	0
Against this write off—			
1 Rubbish cart at	Rs	As	P
3 Filth carts at	16	0	0
Boiling excreta of infectious cases in special sterilizer	48	0	0
Repairs to sterilizers, say	16	0	0
Bikar at trenching grounds, provision and repairs of filth cart at Re 1 per head per annum, say	2	0	0
	16	0	0
Total per mensem	98	0	0

This substantial economy ought to be justification for the introduction of small incinerators into many stations in India, there are, however, other solid advantages. First, the sterilization is complete and visible, the wily sweeper can do no juggling with ashes, its presence is evidence undisputable, whereas sewage may or may not have been boiled, anyone can inspect ashes but a bacteriological examination is needed to prove that sewage is sterile. Flies also have no use for ashes. There is, I admit, a loophole as regards the liquid boiled in the side of the incinerator as the sweeper may throw it away without troubling to pour the stuff into the boiler, to see, however, that the boiler is filled is the minimum of supervision, and even that would be rendered unnecessary by the provision of an automatic mixer and separator which would allow liquids to run direct into the boiler and

at the same time feed the solids into the charge chamber, such a machine would baffle the *mekher*, as to avoid boiling the liquid would entail considerable trouble.

In India the safest course is ever to run on the line of least resistance, and here the *mekher's* delights are made use of, *viz*, the sweeping up of leaves and the squatting before a fire, he also has his little perquisite of firewood and the proximity of the latrine obviates the undignified perambulating with *baltis* of filth.

This brings us to the next advantage, that of saving of transport—probably the water-borne transport of sewage is about the best if you must have any, but apart from its immense relative cost, the gradient required makes its provision an engineering difficulty in very many places, there is also the scarcity of water in the plains, the risks of leakage, fouling water supplies, etc., and at the end of the pipe there is still the disposal in trenches or septic tanks to be undertaken (with all this means as fly breeding grounds).

In, I suppose, the large majority of places in India we are dependant on Crowley carts or "non clads," to mention them is sufficient, then horrors are beyond my pen, then cost and upkeep is enormous, and their efficiency as fly carriers is undisputed.

In Ambala we have exceptionally well-kept trenching grounds on Colonel Thornhill's system. Yet the fly breeds there in billions, and lest he miss his way back to us we provide him and his collection of microbes with free omnibuses.

The third point is economy, our population here is 50,000, and the cost of conservancy Rs 60,000 with the prospect of an increase, this sum could be reduced to a fifth as I have shown above.

Fourthly, assuming that some supervision is essential for any system, I think here it is reduced to the minimum, large incinerators besides expense, mean transport, water carriage and biological treatment still leave sludge and effluent to be dealt with at the other end, either of these systems means a large staff, but with a small incinerator at each latrine there is no increase of sweeper establishment, and the stuff is finished and done with at the latrine itself.

There are some minor advantages in having an incinerator at hand in hospitals, *e.g.*, infected lint, tow, dressings, etc., are burned *ek dam*, dirty clothes, old shoes, rags, etc., of servants disappear for ever, condemned articles of food are popped in and done with for certain.

Flies show marked objections to incinerators, as also some people with a *little* more intelligence, *e.g.*, one excitable lady discovering only after two months what was being burned, suddenly found the smell intolerable, about a week later absorbed in the discussion of some other fad she walked right into the smoke and stood in it noticing nothing! If, however, there is any odour observed, it can be at once stopped

by throwing a few handfuls of dry litter in on top of the chaise, the secret of no smell being a filtering layer of rubbish on top. In choosing a site it is as well to take heed of the prevailing wind as any heavy smoke may be unpleasant.

THE REPORT OF THE MEDICAL COLLEGE HOSPITAL, CALCUTTA *

BY C P LUKIS, M.D. (LOND.), F.R.C.S. (ENG.),

LIEUT. COLONEL, I.M.S.,

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POISONS

Two hundred and thirty nine cases were admitted for poisoning

Table of cases of Poisoning (213 cases)

Poison	Number	RACE		European or Eurasian	Others	Children	AGE	Middle aged persons	Old persons	Males	Female	Deaths	Accident	Suicide	Robbery
		Hindu	Musalmán				Young adults								
Opium	94	73	7	11	3	8	79	5	2	63	31	26	13	81	
Alcohol	78	20	10	40	2					74	4	3			
Chloral	1			1			1			1				1	
Cocaine	2	2					2					1			
Camphor	2	2				2				1	1		2		
Belladonna	3	1		2			1			1	2		2	1	
Aconite	1	1					1				1			1	
Dhatura	6	5	1				6			5	1		3	1	2
Acid carbolic	2	2					1	1		1	1	1	1		
Arsenic	2	2					2			1	1	1	1	1	
Oil, kerosene	8	8				8				5	3	1	8		
Iodoform	2	2				2				1			2		
Iodine	1	1					1			1			1		
Ergot	1			1			1				1		1		
Acid, phosphoric	1	1				1				1			1		
Cannabis indica	3	3					1	2		3		1	3		
Suspected ptomaine	1	1					1				1		1		
Unknown	5	3	1	1		1	4			1	4	1	5		

The accompanying table gives the incidence of race, sex, age, and mortality, with different poisons used (213 cases analysed)

Race—Opium was by far the most common poison used by the Hindus, while alcohol was most commonly taken by Europeans. The largest number of Mussalmans admitted for poisoning were alcoholics and 11 cases of opium poisoning, apparently suicidal, occurred among Europeans and Eurasians.

Age—Opium and kerosene oil were the commonest poisons among children.

Opium was the drug mostly used by young adults for suicidal purposes.

Sex—A much larger number of males were admitted for poisoning than females.

Mortality—

From opium	26
Cocaine	1
Carbolic acid	1
Arsenic	1
Kerosene oil	1
Cannabis indica	1
Other poisons	1

TOTAL DEATHS 35

(a) (Among) 213

TYPHOID FEVER

Forty cases were diagnosed as typhoid fever.

Tables showing the incidence of sex, race, age, and season are given below.

Sex—

Males	30	Reverted to Widal	26
Females	10		21
			5

Age—

Below 5	1	(two years)	1
6 to 15	14		10
16 to 25	10		7
26 to 35	13		7
36 to 50	2		1
Above 50	None		

Race—

Hindus	13		10
Mussalmans	2		2
Native Christians	6		3
East Indians	13		8
Europeans	2		2
Other races	4		3

Season—

March	3		1
April	2		2
May	3		1
June	8		6
July	8		6
August	2		1
September	7		6
October	4		2
November	3		1

Total 40

26

* We are indebted for this valuable and interesting report to Colonel R. Macrae M.B., I.M.S., Inspector General of Civil Hospitals, Bengal.—ED, I.M.G.

Modes of onset according to the Patient's Statement

Epistaxis and headache	1
Headache	8
Rigor	3
Rigor and headache	2
Malaise, anorexia, etc	5
Sudden fever without any of these	5
Headache and nausea	3
No mention	13
Total	40

Headache was present at the onset in most of the cases

Time of admission and result

Week of disease	Number of cases admitted	Widal	Death
First week	13	5	nil
Second "	13	11	4
Third "	7	4	2
Fourth "		4	2
Fifth "	1	nil	
Sixth "			
Seventh "	1	nil	1
No mention of period of disease	5	2	1
	40	26	10

The largest number of cases were admitted during the first and second weeks of the fever, but the largest number of Widal reactions were obtained in the second week. Four cases, that failed to give the reaction previously gave the reaction in the fourth week. The earliest day of Widal reaction was the fourth day.

Fourteen cases did not give the reaction at any stage of the disease and only 5 cases out of 13 gave the reaction during the first week of the disease, when the diagnosis is difficult and necessary.

The largest number of deaths occurred during the second week. There was no death in the first week.

Analysis of Symptoms—

Vomiting was present in 4 cases, 3 at the beginning, 1 at the end of the first week.

Diarrhoea in 15 cases

In 4 it was present throughout from the beginning. All 4 died.
In 3 from the end of the first week 1 "
In 3 cases during the third week 1 "
In 5 cases there is no mention of date of onset 3 "

Total No 15

Total deaths 9

Melena occurred in 3 cases of whom 2 died.

Constipation was present throughout in 9 cases.

In the remaining 16 cases constipation was only occasional. Of these 1 died.

Abdomen was tender and tympanitic, with gurgling in the right iliac fossa in 15 cases. Spleen was enlarged in 10 cases.

The liver was enlarged in 2 cases.

Respiratory System—

Diffuse broncho pneumonia affecting both lungs was present in 10 cases. In 3 cases only a slight bronchial catarrh was present.

Lobar pneumonia of the right lung was present in one case.

Circulatory System—

Heart sounds were normal.

Pulse was soft, compressible and atherotic in a large number of cases.

It varied between 86 to 160 per minute in frequency. In cases with a favourable termination the average pulse rate did not exceed 120 per minute.

The pulse was (in at least 17 cases in which Widal was positive) comparatively slow in proportion to the temperature.

Thus with a temperature above 101 the pulse was below 90 in 2 cases and about 100 in 2 cases.

A temperature with	Pulse frequency
102	100 110 in 6 cases
103	100 110 in 4 "
	110 120 in 3 "

Nervous system—

Delirium	9 cases
Deafness	1 "
Meningitis	1 "

Cutaneous Eruption noticed in 1 case at the end of the first week.

It consisted of roseolar spots over the chest, abdomen, and back.

The patient was an East Indian.

Relapses—

In 3 cases there was 1 relapse, 1 death.

In one case 2 relapses, ending in recovery (Total duration 111 days).

Mortality—

Ten deaths, 4 came in moribund.

Leaving these out the figures stand at 10 per cent.

CALCUTTA FEVER (OR SEVEN DAYS FEVER—ROGERS)

This type of fever has been considered to be a special form of fever by Major Rogers, I.M.S., but some regard it as a form of Dengue.*

Thirty five cases were treated this year.

The accompanying tables give the incidence of season, race, age, and sex.

Season—

Season	Sex	Count
May	Female	2
June	Males	3
July		7
August		9
September		8
October		3
November		3
		35

Race—

Race	Count
Hindus	12
Muslimans	6
Europeans and East Indians	14
Native Christians	3
	35

Age—

Age	Count
5 to 10	1
11 to 15	2
16 to 20	11
21 to 30	15
31 to 45	5
46 and above	1
	35

*Residence—*Twenty four cases were residents of Calcutta for more than one year.

Eight cases were in Calcutta between three to six months. Of the remaining three, two were for about a week, while one case came direct from Khulna for admission here, and her husband was attacked in the way. This female patient had some malarial parasites in her blood, but the clinical picture (headache, pain in the loins and over the whole body, and the course of the temperature) and the occurrence of a similar attack in her husband pointed to the existence of Calcutta Fever.

Onset—

Rigor and chill	19
Headache	9
Pain all over the body (without any one of these)	5
Sudden fever (no mention of signs of onset)	2
	35

Vomiting accompanied rigor in one case, while pain over the back and various parts was present in a large majority of cases.

Cough with expectoration was present in six cases and rales and rhonchi were audible over the chest in two cases.

* See *Indian Medical Gazette*, March 1903, p. 88, and November 1906, p. 429, also December, p. 496.—Ed., I.M.C.

The pulse rate varied from 42 per minute to 142 per minute (Temperature—102 and 105.6 respectively.) In two cases the pulse were markedly dicrotic. In the majority of cases it varied between 85 to 120, was soft and compressible. In two cases it was remarkably slow—42 and 45 per minute.

Digestive system—

Vomiting was present in	8 cases—4 or 5 times daily
Diarrhoea	6 "
Constipation	8 "
Abdominal tenderness	2 "
Gurgling in right iliac fossa	3 "
Enlarged spleen	3 "

Nervous system—

Headache, severe and present throughout in	27 cases
Delirium	1 "
Backache	6 "
Joint pains	4 "
Lumbar pains	2 "
Pains all over the body	7 "
No pain or headache	2 "

Skin—Red, flushing of face, neck and upper part of chest was noticed in three cases.

Red morbiliform rash noticed all over the body, but specially marked over the chest in the second day in two cases. Roseolar spots over the abdomen were noticed in one case. No erythema or rash was mentioned as occurring in any other case.

Epistaxis was noticed in one case, setting on at onset and lasting for about 2 days.

Blood—Examination for malarial parasites were made in doubtful cases only.

Thus only 7 cases were examined of which six gave a negative result. The case that had some parasites in her blood has been already referred to. Quinine was only given in a few cases and in these, as a rule, after the temperature had come to normal. In 4 cases of the present series the blood was submitted to a Widal test and 3 returned a negative result with 1 in 20 dilution, one case returned a positive reaction 1-100. This case ended by crisis on the seventh day.

Duration—The minimum duration, among the cases under analysis has been 3 days, the maximum duration 13 days, and the average duration 7 days. Thus—

3 days	1 case	Brought forward	27
4 "	4 cases	9 days	1 case
5 "	2 "	10 "	1 "
6 "	5 "	12 "	1 "
7 "	12 "	13 "	1 "
8 "	3 "	No mention	4 cases
Carried over	27	Total	35

MALARIAL FEVER

141 cases of malarial fever cases admitted were analysed. The incidence of Age, Sex, Race, and Season are tabulated below—

Age—		Season—	
Below 10 years	8	January	2
Between 10 to 20	32	February	13
21 to 30	60	March	5
31 to 40	19	April	4
41 to 50	18	May	3
51 to 60	1	June	12
60 and above	3	July	13
		August	7
Sex—		September	20
Males	125	October	25
Females	16	November	22
Race—		December	15
Hindus	38		
Europeans and Eurasians	62		
Moslems	23		
Native Christians	11		
Chinese, etc	7		

Result of blood examination—

Benign tertian parasites	41
Malignant tertian (small rings only)	5
Crescents (with and without small rings)	2
Quartan (alone)	

Mixed Infection—

Benign tertian and malignant tertian	6
Quartan and malignant tertian	2

The parasites were either not looked for, or not found in the remaining 14 cases.

Previous Attacks—The great majority (89) of the cases had no previous attacks. 31 patients had been suffering from attacks for less than 6 months. 12 patients had been suffering from between 6 months to 1 year. 4 had been suffering from 1 to 2 years, and 5 from above two years.

Number—14 cases had suffered from only one previous attack. 3 cases from 2 previous attacks, 4 cases from 3 previous attacks, and the remaining 31 cases from more than 3 previous attacks.

Character—One case had a first attack described as remittent followed by subsequent attacks of intermittent fever. The remaining cases (51) all gave histories of intermittent attacks—accompanied with rigors and sweats.

Residences—Cases came from various parts of Bengal, Assam, and also other parts of India. Only 36 patients were residents of Calcutta for 2 years, and of these 4 had been in Burdwan, Assam and other places whence they traced their attacks. Thus only 32 cases had been all along in Calcutta for 2 years.

Present Attacks—

Type of Pyrexia—Remittent and continuous (according to history of patients)	15 cases
Intermittent	126 "

Onset—

With rigor	118 cases
No rigor	16 "

In the remaining 7 cases there is no mention of rigor.

Other Symptoms of Onset—

Headache	38
Pain in various parts of the body (Epigastric, lumbar, joint and muscular)	15
Vomiting	16
Sweats	95 cases
(No mention of this point in the remaining cases)	

Digestive System—A coated tongue, derangement of appetite, and constipation was general.

Diarrhoea was present in	10 cases
Vomiting	12 "
Spleen slightly enlarged in	45 "
Spleen enlarged to 2 in below the costal arch	13 "
Spleen enlarged as low as the umbilicus	5 "
Liver enlarged	8 "
Jaundice was present in	6 "
Dysentery	2 "

Respiratory System—

Bronchitis	10 cases
------------	----------

Pleurisy and Asthma were associated with the fever in one case each. Haemoptysis was present in 1 case.

Nervous System—

Coma was present in	3 cases
Delirium	1 case
Restlessness	1 "

Malaria occurred in patients suffering from beriberi, and progressive muscular atrophy, one case each.

Neuralgic pains in various parts of the body were present in 42 cases.

Hour of onset—

Before noon	62 cases
Afternoon	25 "
Night	7 "

There is no information on this point in the remaining cases.

Duration of each spell of fever—

Less than 6 hours	8 cases
Between 6 to 8 hours	43 "
" 9 " 12 "	22 "
" 12 " 24 "	10 "
" 48 "	3 "

No mention is made of this point in the remaining cases

Periodicity—

Quotidian	57
Tertian	13
Quartan	4

No information on this point in the remaining cases
Anemia was present in 26 cases

Of 141 cases, three patients died. Two were cases of the cerebral type of malaria and came in a comatose condition. The third was a case of gastro intestinal type of malaria with vomiting and purging, and marked prostration. Quinine was intravenously injected in these cases. Total deaths out of 161 cases = 3

BERIBERI

Twenty two cases of beriberi admitted in hospital were analysed

Incidence of age—

10 to 20*	4
21 " 40	17
40 and above	1

*Lowest age 15 years

Sex—	Season—	
Males	20	January 5
Females	2	February 1
	—	March 1
TOTAL	22	May 2
		June 2
		July 1
		August 2
Chinese	18	September 1
Japanese	2	October 1
Mahomedans (sailors)	2	December 2

The cases commenced with tingling and numbness of the feet with tenderness of the calves. Kneejerks, Babinski's sign, Ankle clonus were absent

Ankle drop was present in 12 cases

Wrist drop in addition to ankle drop in 4 cases

Sphincters were affected in 3 cases

Romberg's sign was found in 6 cases (This point was not observed in the majority of the remaining cases)

Wasting	2 cases
Stooping gait	20 "
Loss of sensation of feet in	2 "
Ditto feet and hands	1 case

A positive history of digestive disturbance (diarrhoea and gastric pain) was present in 2 cases. In the remaining cases no information could be available on this point

A history of previous attack was given in one case

Oedema (legs only, general anasarca, or face only) was noticed in 6 cases (General anasarca in only one)

The heart was dilated in 13 cases. There was marked tachycardia and precordial pain in 3 cases, in 2 cases with a systolic mitral bruit

A presystolic murmur (mitral) and thrill was noticed in one case. Ulcerative tonsillitis was associated with beriberi in one case. Four patients died in hospital—of heart failure

A history of alcohol could only be obtained in 2 cases. Most of these cases had been residents in Calcutta for more than 6 months and had been attacked in Calcutta

The residence of these patients is in Chinapara (Bentick Street)

SYPHILITIC PARALYSIS

Twenty four cases were admitted

Only 4 cases had syphilis within one year, 3 cases within 2 years, and one case within 3 years before the

attack. In 7 cases there was no mention of the time of the primary attack. In the remaining 9 cases the patients had contracted syphilis more than 3 years before the attacks

A history of secondary eruptions was obtained in 5 cases only. In many of the other cases there is no information on this point. In 3 cases the attack of paraplegia came on within a year of the eruptions. In the remaining 2 cases, within 2 years

Analysis of Symptoms—Kneejerks were exaggerated in all cases. Ankle clonus elicited in all cases

Babinski's sign noticed in 17 cases, no mention in the remaining. Romberg's sign noticed in 4 cases; no mention in the remaining

Girdle pain	11 cases
Bladder affected from the beginning	14 " (retention)
Later	8 "
Not affected	2 "
Rectum affected at beginning	10 "
Rectum later	9 "

Motor—Nine patients on admission could walk without help or support with a dragging gait. 3 could walk with stick or crutch. Six patients could not walk at all

There is no information on this point of the 6 cases remaining

Sensory—Disturbances of sensation were not common

Hyperesthesia of legs	2 cases
Anesthesia of legs	2 "

Besides these, in one case the sensation of heat was exaggerated and in another the sensation of cold was annulled (in the legs)

Duration—Twenty cases were admitted within a year of onset. The remaining 4 cases were admitted between 2 to 4 years after onset

Trophic Symptoms—In one case the legs showed some wasting. Spasticity was as a rule not marked. In 11 cases a slightly marked spasticity was noticed. In one case Kernig's sign was obtained

Involuntary jerky movements of the legs were noticed in 5 cases. Bedsores in 1 case

Treatment—Specific treatment by full doses of Iodide of Potash was as a routine followed. Nineteen cases were discharged relieved, 5 cases derived no benefit

No patient died

All the patients were males, and 18 of them Hindus, 5 Mussalmans and only one European

The symptoms of onset are thus detailed in each individual case—

1 Gradual onset with progressive weakness of legs
2 Gradual onset following girdle pains
3 Pain near the umbilicus followed by retention of urine

4 Sudden numbness of right foot on getting out of bed—the numbness travelling up. Followed two months later by similar affection of the left foot

5 Cough and pain over the chest followed by retention of urine

6 Sudden shooting pain along the spine followed by retention of urine

7 Tingling and numbness of the right limb travelling upward and followed by that in left limb. Fever and incontinence of urine

8 Gradual onset following pains over chest, spine, and loins, with retention of urine

9 Griping and flatulence followed by retention of urine and faeces and gradual weakness of the lower limbs with tingling and numbness. Sudden entire loss of power afterwards

10 Gradual onset with progressive weakness (right leg weaker than the left)

11 Sudden pain while lifting a heavy weight, over the lower dorsal region, followed by slight fever and retention of urine and faeces and loss of power four days later

12 Pain over the dorsolumbar region of the spine—gradual weakness of legs

13 Loss of sensation of cold over the left leg travelling up, followed in a few days by spasticity of the sphincters and sudden weakness of both legs

14 Gradual weakness of legs

15 Retention of urine

16 Gradual weakness of legs commencing with the right leg (complicated by aphasia and paralysis of the upper extremity afterwards)

17 Onset with cough and chest pain followed by weakness and stiffness of legs (history of previous similar attack 2 years ago which got cured)

18 Tingling and numbness followed by loss of power

19 Epistaxis, headache, and pain in back followed by tingling, numbness, and gradual loss of power over lower limbs in four or five days

20 Headache, tingling, and numbness with gradual loss of power

21 Retention of urine and loss of power over the lower limbs found on waking from sleep

22 Sudden spasmodic pain of right loins with loss of motion over the right legs—followed by hyperesthesia of right legs

23 Sudden sacral pain followed by spasticity of the anal and vesical sphincters and loss of power over legs

24 Pain and spasms of abdomen followed by loss of power over legs

CEREBRO SPINAL MENINGITIS

Five fatal cases of Cerebro spinal Meningitis

Case I—Ram Das, aged 10, of Kakurgachi, admitted on April 12th. History of fever for 8 days. Onset with pain in the loins and frontal headache. Temperature varying from 100 to 102. Severe vomiting on the third day of attack, and higher rise of temperature, and shifting of the headache to the occipital region, and shifting pain along the spinal column.

Loud screaming from the fourth day owing to intense headache, restlessness, high temperature, and constipation.

On admission temperature 101, pulse feeble 62 per minute, respiration 20 per minute. Pupils contracted but equal. Eyes squinting. Neck and limbs stiff. Kernig's sign present. Continually moves his hands and legs. Quite unconscious.

April 13th—Temperature came down to normal, patient very low.

April 14th—Pulse feeble and quick, rales and rhonchi were detected in the lungs, patient was getting hiccough. Lumbar puncture on the 15th morning. Five cc of slightly turbid and blood stained fluid containing chiefly polynuclear leucocytes and a few diplococci intracellulares were found. Patient gained a little consciousness. Bladder was distended and was relieved with catheter.

Pulse very quick and thready. Respiration hurried, noisy and shallow. Died in the evening.

Case II—Shiva Kahar, aged 20, of Mizapore Street, a domestic servant, was admitted on March 5th for cerebro spinal fever.

Temperature on admission 102.6. Completely unconscious, occasional spasms from 12 hours before admission. Fever for 2 days before admission. Stiffness of muscles of neck and back and extremities. Exaggerated kneejerk. Babinski's sign present. Strabismus, both pupils dilated. Pulse quick and feeble. Numerous diplococci meningitidis intracellulares found in nasal secretion. Died early next morning.

Case III—Gopal, aged 25, a domestic servant, was admitted on September 23rd, 1906. Gave history of continuous fever for 4 days with severe pain all over the head and neck, vomiting and purging.

On admission, muscles of the neck were stiff, kneejerks exaggerated, Kernig's sign present, strabismus (internal). Patient very boisterous. Pulse 68 per minute, temperature 102. Cough, vomiting and severe headache. This patient was treated with hyoscine hydrobromide and potass bromide. His cough grew worse. He developed

pneumonia and died 1 month after admission of gangrene of lungs.

On the 26th September lumbar puncture had been done, and numerous diplococci intracellulares found.

Case IV—Pyrag, aged 25, of Baiabazar, a biri (cigarette) maker.

History of fever for 14 days. Delirium for 4 days. Patient unconscious on admission. Stiffness of muscles of neck, back and extremities. Temperature 104. Strabismus spasms. Kernig's sign present. Rales and rhonchi audible. Respiration hurried 42 per minute. Pulse 90 per minute. Died next morning.

Case V—Samaru, aged 20, Hindu, male, admitted 29th November 1906.

History of fever for 5 days. Sudden onset with rigor and headache.

On admission, patient quiet and drowsy, but no stupor or delirium. Conjunctiva injected, pupils dilated. Stiffness of muscles of neck, retraction of head. Pulse quick and weak. No abnormal sounds audible over chest. Kernig's sign present.

Diplococcus intracellularis in cerebrospinal fluid. Temperature 102. Gradually diminishing rigidity of neck till 6 to 12. Temperature normal on 6th December. Rise on temperature to 100 on 9th December. From 14th December patient remained in a condition of complete stupor with a temperature varying from 102 to 104, and died on 29th December.

CASE OF ICHTHYOSIS HYSTRIX (CROCKER)

The patient, Subramanyam, whose photograph is attached, is a young Madrassee, aged 22. Admitted to hospital on 27th March 1906, with extensive warty growth over body, for paralysis of arms and legs.

Personal History—Was a student with a love for athletics, taking tea, tobacco and alcohol in moderation. No history of specific diseases. Mother had elephantiasis. Father was healthy.

His Illness—Five years ago he felt a sensation of numbness and tingling in his legs, accompanied with dropsy, loss of power over his legs, and slight loss of sensation. Oedema disappeared, but paralysis remained with slight progressive wasting. Arms are affected now. Shooting pains through the wrist, elbow, and knees. A feeling of fatigue always present. The muscles of his hands are much wasted producing clawed hands. Complete anaesthesia of the lower limbs but no analgesia. Reflexes absent. Bladder and rectum are not affected, and the eyes are normal.

But the chief interest of the case lies in the extensive congenital warty growth on the right side of his body and limited to the chest, abdomen, arm, back, and neck, slightly encroaching upon the scalp behind.

The linear course of the growths through the arm and the tendency to form horizontal bands round the body along its radial and ulnar borders suggest at first sight its following the course of the ulnar and musculo spiral nerves.

The growths consist of thickened papillae covered by hypertrophied hardened and black epidermis coalescing to form flat topped projections about $\frac{1}{4}$ in thick. The surface is moist and emits a very foul odour.

The patient was discharged on 12th April 1906.

Various names have been given to this condition by different authors. It has been called "Linear Naevus," "Naevus Unius Lateris," "Naevus Nervosus," "Naevus Lichenoides," "Ichthyosis Linearis," "Neuropathica," "Papilloma Lineare," "Papilloma Neuropathicum Unilateris," the growth being essentially papillomatous and limited to one side of the body, the most proper name for our case would be Papilloma Unilaterale.

CASE OF NEUROMUSCULAR ATROPHY

Aknoo, Mahomedan male, aged 30, was admitted on the 21st March 1906 for the treatment of chronic bronchitis and emphysema.

Previous history—History of distressing cough since six months, especially at night. Night sweats and hæmoptysis once.

THE REPORT OF THE MEDICAL COLLEGE HOSPITAL, CALCUTTA

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CASE OF ICHTHYOSIS HYSTRIA



CASE OF ICHTHYOSIS HYSTRIA

History of occasional indulgence in tobacco and alcohol. No history of syphilis or of infectious diseases. History of muscular wasting (to be described in detail) of limbs since birth. No history of paralysis. Father died of some abdominal affection accompanied by pain, mother died of fever. Has got two sons who are healthy. No family history of tuberculosis or syphilis. No muscular wasting was noticed in any other member of his family.

Condition on admission—Extremities wasted. No anæmia. No digestive troubles. Chest barrel shaped. Rhonchi heard all over the chest. Occasional headache. No sensory troubles. Can move his limbs well. Muscles are flabby. There is some amount of ankle drop. Kneejerks, ankle clonus, Babinski's sign, all absent. Has a fair amount of power over the elbow, knee,

The muscles of the face are normal. The atrophied muscles respond slightly to faradism in some part but not to galvanism.

The patient went away from the hospital on the 29th March 1906.

The atrophy in this patient presents the following features.—

- 1 Commencement in childhood
- 2 No hereditary history
- 3 Commencement in the leg muscles (as will be seen from the photograph which show the extreme emaciation of the legs)
- 4 No sensory changes
- 5 No spasticity
- 6 No fibrillar twitching
- 7 Irregular electrical reactions



NEUROMUSCULAR ATROPHY

shoulder and hip. His power over the wrist is very small. Cannot abduct or adduct the thumbs. No difficulty in flexion and extension of the thumb. Power of grip as registered by the dynamometer is 19 in left hand and 15 in right hand.

The muscles of the hand and forearm are markedly wasted. The thenar and hypothenar eminences have disappeared. The supinators are less affected than the flexors and extensors.

The Biceps Brachialis anticus, Deltoid and Triceps are not affected. The Pectorales are wasted.

The Trapezeus and Latissimus Dorsi are all right. The muscles of the calf and anterior tibial region are extremely atrophied. The Vasti and Crurei at their lower part are much atrophied. No fibrillar twitching.

8 Loss of reflexes

The commencement in childhood, and early affection of the muscles of the leg are suggestive of the case being one of neuromuscular atrophy (Charcot Marie-Tooth type), absence of sensory changes, of fibrillar twitching, and of hereditary history are against this view. The case is illustrative of the fact that there is no sharp line of distinction between the myopathics and myelopathics.

CASE OF ACROMEGALY

Solomon, aged 20, a Mahomedan male, carpenter, admitted 19th May 1906, discharged 19th July 1906.

About a year and half before admission began to notice slight thickening of the skin just a little above

the ankles in both legs Swelling increased, and extended to the calves above and the toes below, about a month or two before admission swelling of fingers of both hands was noticed

Parents living and healthy No history of gout, rheumatism, or any specific disease

Notes on admission.—Patient is healthy and well built Swelling of both legs below the calves, due to thickening of the lower ends of the bones of legs and skin over them The dorsa of the feet not thickened Toes are thickened The fingers of both hands are thickened Cheeks are puffy and thickened The lips are also slightly thickened Bones of the face and head are normal Carpal ends of radii and both ulna are thickened A photograph of the case is attached

Functions of digestion and respiration are normal No pulmonary lesion, no enlargement of gland Temperature normal (varying between 98 and 98.4), circulation normal—pulse 75 per minute Urine contains 5 p.c. of urea, gets occasional headache, and recently has been feeling fatigued on walking a little, though he walks well Mentally all right, though even in that feels fatigue on slight exertion

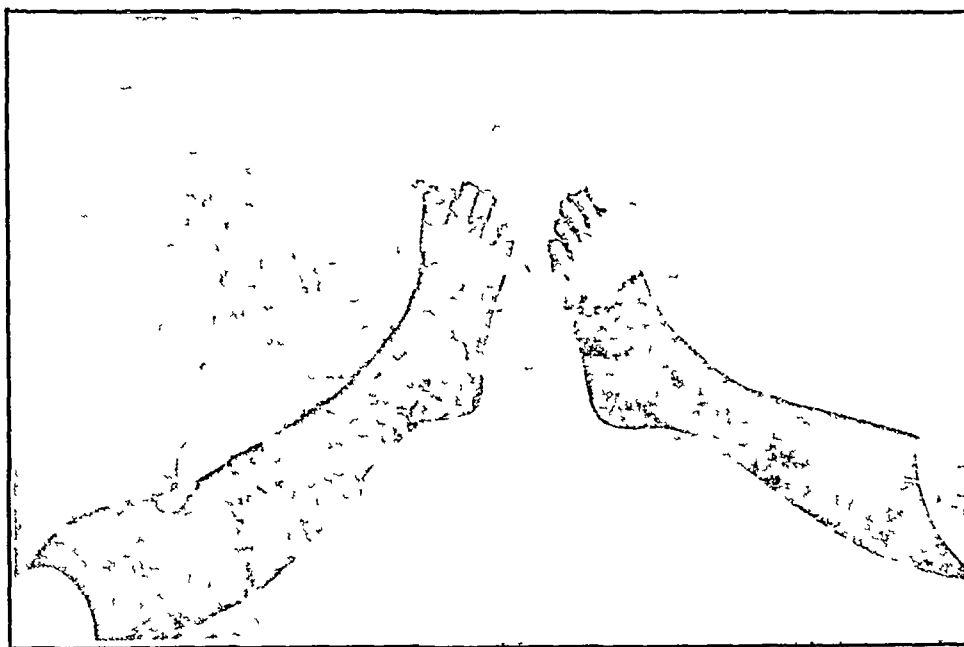
his right forearm and hand The skin is much thickened and blackish in appearance There is some dead skin on the back of his hand and fingers The margins of the scar present some hard nodules tender on pressure Scrapings from the skin lesion were examined and numerous blastomycetes were found

Patient was discharged on 15th September 1906

VALVULAR DISEASES OF HEART

90 Cases were analysed

Age—		History of—	
Below 16	7	Alcohol	21
17 to 45	43	Syphilis	23
46 and above	40	Chorea	1
<i>Sex—</i>		Rheumatic fever	19
Males	67	Trauma	1
Females	23	Malarial fever, Dysentery and other debilitating causes	12
<i>Race—</i>		Bright's disease	4
Muslimans	17	Family history	1
Europeans & Eurasians	30	Sites and lesions aortic regurgitation	12
Hindus	29	Mitral regurgitation	37
Native Christians	9		
Other races	5		



CASE OF ACROMECALIA

CASE OF BLASTOMYCETIC DERMATITIS

Patient named Biswanath, a Bengali Hindu male, aged 45, a cultivator of Birbhoon, was admitted on 8th September 1906

Fifteen months before admission he suddenly noticed a small, hard and painful swelling in front of his right thigh The parts round were red and hot, and the swelling ulcerated and sloughs were discharged The ulcer invaded the surrounding parts to the extent of 2 in diameter There was no fever, and in four months time under care of a Kaviraj, the ulcer healed, leaving a scar

In April last a similar small swelling was noticed behind his right elbow which was painful, and hard at first, ulcerated, and within a few days the ulcer extended over nearly the whole of his right forearm and hand—leading to extensive sloughing This lasted for 2½ months and was ultimately healed by a local medical practitioner, extensive scarring was left

Condition on admission.—An extensive scar extending down to the hand Patient complains of pins-and-needles sensation over his right forearm and hand (in the affected area) and inability to fully extend

History of—

Mitral stenosis	5	Double aortic disease and mitral regurgitation	3
Double aortic disease	16	Aortic and mitral regurgitation	7
„ Mitral disease	10	Deaths	14

Aortic regurgitation.—Twelve cases were admitted

Age—

Below 16	Nil
17 to 45	5
46 and above	7

All the cases were males 6 were Europeans, 6 admitted excessive indulgence in alcohol, 5 admitted history of syphilis, 4 had rheumatic fever, 1 history of fall on the chest, 2 died in hospital One of them had occasional numbness and twitching of the right hand

Mitral stenosis.—Five cases of simple mitral stenosis were admitted 4 were below 22 years, one 45 years, 2 were females, 2 were native Christians History of rheumatic fever was present in 4 cases

Mitral regurgitation—Thirty seven cases were admitted

Age—		Race—	
Below 16	2	Europeans and Eurasians	10
17 to 45	14	Hindus	13
46 and above	21	Native Christians	5
Females were 14, males 23 in number		Muslimans	9
		Deaths	9

Twelve cases gave a history of rheumatic fever, 3 of these having 3 or 4 recurrent attacks. In two old female patients a history of palpitation could be traced from childhood. Three give a history of malarial cachexia and dysentery, during which the symptoms first developed.

In 4 cases the heart lesion was secondary to Bright's disease. One case exhibited hemiplegia and aphasia in addition to the heart lesion—he gave a history of syphilis, 2 years previously.

APPENDICITIS

Twenty three cases were analysed

Seven cases were operated upon. In 3 cases the appendices were removed with one death. In the other cases the abdomen was opened and the parts drained. The incidence of the disease was as follows—

Age—		Race—	
Below 16	2	Europeans and East Indians	10
17 to 30	14	Hindus	12
31 to 50	7	Chinese	1

Sex—

17 males and 6 females

Analysis of symptoms—Vomiting at the onset, 8 cases

Constipation (for two or three days previously) in 10 cases

The greater number of cases, admitted previous intestinal trouble, *eg*, dyspepsia, dysentery, or colic.

A tumour was noticed in the right iliac region, on admission in 8 cases.

In 9 cases the onset was sudden and the attack acute and severe.

Eleven cases gave a history of previous attacks, 1 was a case of sloughing appendicitis. A record of blood count is present in 7 cases. Marked leucocytosis was present in 6 of these.

The local conditions in the cases operated upon are thus summarised—

Case I—Abdominal abscess (around colon)—cavity drained

Case II—Pus in pelvis—abscess cavity around colon opened and drained

Case III—Recurrent appendicitis—appendicectomy

Case IV—Pericæcal abscess

Case V—No suppuration, peritoneum found adherent to cæcum incision

Case VI—Pericæcal abscess and adhesions

Case VII—Acute peritonitis—perforation of the appendix (death from shock)—Appendicectomy

The total number of deaths was 4, all due to peritonitis, as they were brought in very advanced stages of the disease and died within 48 hours of admission.

TETANUS

Twenty one cases of tetanus were treated during the year at the hospital.

Fifteen cases gave a history of previous injury, carriage or machine accidents and explosions causing lacerated wounds of the extremities were responsible for 5 cases.

Slight injuries accidentally received, and not even remembered were responsible for 6, extensive burns for 1, suppurating ulcers for 2, and delivery for 1 case (recovery).

The majority of the injuries received were in the hands and feet.

Incidence of race, age and sex—Sixteen were Hindus, 5 Mahomedans, 13 were males, 8 females.

Treatment—(1) Chloral and bromide—7 cases—3 deaths.

(2) Hypodermic injection of 10 to 20 cc of antitetanic serum—11 cases—3 deaths.

(3) Intraspinal injection of antitetanic serum, after removal of a small quantity (5 cc) of cerebrospinal fluid by lumbar puncture—2 cases—1 death.

The remaining 2 deaths occurred within 2 hours of admission.

The serum used principally as prophylactic. It appears to have little effect after onset of the disease.

Case I—One case of *Koftetanus* (Cephalic tetanus) following an injury to the right cheek occurred in a female after four or five days of the injury. She developed right facial paralysis and spasm of the muscles of the jaw and neck. The muscles of the trunk and extremities were slightly affected and she got well.

Case II—Patient, a middle aged low class Hindu male, was admitted about two days after the onset of spasms of neck and jaw. On admission the muscles of the trunk and extremities also were found stiff. There was no history of any injury. The spasm of the muscles was moderate. He could, with difficulty, take nourishment by the mouth. He was placed under chloral and bromide (grs xx a a t, d). Gradually the spasm relaxed. In about 10 days the patient walked away (against advice) from the hospital. The spasm was almost gone. A week after, he again came in for tetanus. Rismus Sardomensis present. Muscles of neck were stiff. Muscle of abdomen, upper extremities and lower extremities were partially stiff. Occasional spasms. He was again placed under chloral and bromide this time for a longer period (three weeks) and went home cured.

LIVER ABSCESS

48 cases were analysed

Racial incidence—

	Age—	
Hindus	37	20 to 30
Mahomedans	6	31 and above
Native Christians	1	
Europeans	4	

A history of dysentery was available in 22 cases, mostly within 3 to 4 months of the commencement of hepatitis. In a few cases it was present from the onset throughout the course of the disease. A positive history of drinking toddy (fermented date and palm juice) and liquor to excess was available in 26 cases.

In 9 cases a history of attacks of malarial fever was obtained.

Cases were admitted to hospital within, on an average, about 3 months after the first symptom which consisted mostly in a sudden pain over the liver following an exposure to cold, followed by irregular fever of the hectic type, enlargement of the liver, sometimes pain over the right shoulder (3 cases), night sweats and gradually increasing anæmia.

A record of blood count of 22 cases shows marked leucocytosis in 21 cases, polymorphonuclear leucocytes being the most numerous.

A number of cases admitted in an advanced condition exhibited the following terminations—

Bursting into lungs, 3 cases, 1 death from septic pneumonia.

Bursting into pleura 2 cases, no death.

Bursting into the intestine 1 case.

36 cases were treated surgically (hepatotomy).

The total number of deaths was 22.

ELEPHANTIASIS

67 cases were operated for elephantiasis, of these, two were cases of elephantiasis of leg.

One was a case of elephantiasis of the labium majus.

The remaining 64 were cases of elephantiasis of scrotum and penis.

The two cases of elephantiasis of legs were treated by partial removal of the subcutaneous tissues (stocking operation) in linear strips

One was an East Indian male aged 18, and another a European male aged 25

The woman with labial elephantiasis was aged 40, the growth was of 8 months duration and the weight 5 ounces

Scrotal and penile elephantiasis—64 cases were operated with 2 deaths. The average duration of the growths were 4 to 5 years. The longest and shortest duration were 25 and 1 year respectively, the respective weights of the tumours being 13 lbs and 1½ lbs

Weights—

Below 10 lbs	24
Between 10 to 20 lbs	6
„ 21 to 30 lbs	3
Above 30 lbs	1
The highest weight of tumour operated upon was only 37 lbs	

Racial Incidence—

Hindus	47
Mahomedans	10
Europeans	2
East Indians	2
Native Christians	3

In half the number of cases hydrocele, double or single, was present. Hæmatocoele in 1 case. A cystic condition of the tunics was noticed in 2 cases

Adhesion of testes and cord, atrophy of the testes and cord, lymphangiectasis of the cord were noticed in 1 case each. The left side was affected in all these cases

In at least 2 cases the growth commenced after operation for hydrocele

In the majority of cases the commencement was insidious, the growth very gradual, and the patients subject to intermittent attacks of fever (in some cases every fortnight). In all the cases except 2 in which the penis was first affected the scrotum was the part that was first and chiefly affected

In one of these cases the growth was strictly limited to the left side (with a left inguinal hernia). In one case there was epithelioma of the glans penis associated with elephantiasis and the penis was amputated

HERNIA.

125 cases of Hernia were admitted, 2 were cases of ventral hernia, 122 were cases of inguinal hernia, 1 of femoral hernia

109 cases submitted to operative treatment. One was a case of post operative ventral hernia, 107 were cases of inguinal hernia and one of femoral hernia

Of these 49 cases had strangulated hernia

One was admitted for reduction *en masse*. Laparotomy was performed, loops of intestine were found, of dark colour with a constriction round one of the loops and the sac was found turned inside out like a glove. The constriction was divided, a few Lambert's sutures were put in the peritoneum and the abdominal wall was closed by silkworm gut. The patient recovers

Of the remaining 59 cases operated for radical cure, Bassini's operation was performed in the majority of cases

All the patients, except one, were males

In 5 cases the hernia was congenital

Total number of deaths 7, i.e., 6 per cent

TUBERCULAR DISEASES

The following tables give the incidence as to race, sex, age, and site of 40 cases of tubercular diseases surgically treated—

Race—	Age—	
Hindus	19	Below 10
Europeans and East Indians	10	11 to 20
Mahomedans	7	21 „ 30
Native Christians	3	31 and above
Other classes	1	
Sex—	Site—	
Males	30	Synovial membranes
Females	10	Glands (lymphatic)
		Spine

Joints—

Hip	4	Tarsus	1
Wrist	2	Testes	2
Elbow	2	Lupus (face)	1
Sacroiliac	1	cured by X Rays	
Knee	3	Removal by operation	25
		Deaths	2

Fatal case of intestinal obstruction caused by adhesions following removal of ovary

Satyra Sasi, a Hindu female, was admitted on the 30th April for the treatment of constipation. She had undergone an operation for some pelvic growth in August 1905 (removal of right ovary)

On the 20th April she was suddenly seized with an acute pain, at night, round the navel. Abdomen became tumid, and she commenced vomiting. This subsided on application of hot fomentation, and she passed a little stool. Since that there was no motion for 3 or 4 days. A doctor was then called in—a soap water enema was given, and only a small quantity of mucus was passed. Faecal vomiting 3 or 4 times daily, commenced

On admission—Pulse was full and quick, 100 per minute, tongue clean and moist. No motion for 10 days. Soap water enema was given, 7 or 8 hard scybala were passed. Vomiting ceased. The abdomen was found tender, and doughy on pressure at the lower part. In the evening pulse 108, tension moderate

1st May 1906—Pulse 108, tension moderate, tongue dry, faecal vomiting twice in the previous night, once in the morning. Laparotomy was performed. Patient became very low and died at 1 P.M.

Cause of death—P-M. Intestinal obstruction caused by adhesions following on removal of right ovary. The uterus was double. The left communicating with the vagina and the right containing some menstrual blood

The right kidney was absent. The left one 5½" long

MALIGNANT DISEASE

59 cases of cancer were analysed

The incidence of race, age, and sex are given in the following tables—

Hindus	43	Site—	
Bengali	38	Penis	17
Assamese	1	Cheek	4
Uria	1	Upper lip	3
Up country	3	Pharynx	2
Musaltrams	6	Upper jaw	1
Bengali	6	Lower jaw	4
Christians	10	Breasts	7
Bengali	2	Thigh	1
Europeans & Eurasians	8	Tongue	4
		Rectum	2
		Neck	2
		Pancreas	3
		Liver	4
		Clinical (no pathological examination)	
		Stomach	3
		Larynx and epiglottis	1
		Gall bladder	1
		(liver secondarily affected)	
Age—			
30 and below	6		
Between 31 and 40	13		
„ 41 and 50	20		
„ 51 and 60	14		
61 and above	6		
Sex—			
Males	45		
Females	14		

The longest duration before admission is 3 years and the shortest is one month

Average duration about 9 months

Family history—Negative in all except 2 cases. In one case of cancer of penis patient's grandmother had a tumour of neck which was excised and she recovered. In another case, patient's wife had died of cancer of groin about a fortnight before his admission. This patient had been suffering for 5 months previously and had no hereditary history

Twenty-nine operations were performed with 3 deaths

The total number of deaths were 4

Twenty cases went away without operation, some of them being considered inoperable

Recurrence—Six Many of these cases were recurrent, and a few were old cases of this hospital

Number of cases	Interval after operation	Primary site	Recurrent site
*1	1 year	Penis	Penis
1	12 days	Lip	Tongue
1	1 year	Neck	Neck
*1	15 months	Breast	Axillary glands
*1	Below 1 month 4 years	Lower jaw Left breast	Lower jaw Right breast

The cases marked with asterisk are old cases of this hospital

Secondary involvement—Lymphatic glands were secondarily involved in 12 cases

In one case of primary cancer of the Pancreas the liver and both the lungs were affected In one case of primary cancer of the gall bladder the liver was secondarily affected

Of the 11 cases of cancer of the lips, cheek and tongue 10 were natives and one European

Positive histories of excessive smoking (in 3 cases), excessive betel chewing (in 4 cases), and pointed and carious teeth giving rise to irritation and ulcer (in 2 cases) were obtained

The cases are too few for generalisation, but it may be mentioned that the almost universal habit of chewing betel leaves with lime prevailing in this country and the large number of natives suffering from cancer of the lips, cheek and tongue are suggestive of some connection between them

Of 17 cases cancer of penis all were Hindus

A history of congenital phimosia was obtained in 5 cases and of long prepuce in 1 case

Sarcoma—24 cases

Incidence of Sex—

Males

Female

Age—

15 to 25

26 to 35

36 to 45

46 and above

Highest age 70 years

Site—

23

1

5

9

6

4

1

1

1

1

1

2

Arm

Forearm

Shoulder

Thigh

Leg

Orbit

Upper jaw

Lower jaw

Neck

Intrathoracic

Chest wall

Nose

Foot

Glands

3

1

1

1

1

2

2

1

4

1

1

1

1

2

Duration, from three months to three years

In two cases the growths were present from childhood and commenced progressing about two years before admission

In 9 cases the growths were removed

A history of trauma was present in 4 cases

RAT POISONING AND ITS EFFECTS IN AZAMGARH CITY

By I N WALKER,

CAPTAIN, I.M.S.,

Civil Surgeon, Azamgarh

In the cold weather of 1905-1906 an experimental rat-killing campaign was conducted in one quarter of Azamgarh City, the results, as judged by the incidence of plague in that quarter (reported in the *Indian Medical Gazette* of July 1906), were locally considered so satisfactory that the Municipal Board provided funds for a complete campaign throughout the city this cold weather

The method adopted was the same as last year, a detailed account of which was given in the report already mentioned The only

important difference this year was that the greater part of the poison used was "Mushicide," supplied by Messrs Jagat Singh & Sons of Rawalpindi Commonsense Rat Exterminator was used in a small part of the city, of the two poisons Mushicide, which is cheaper, was found to be more efficacious in that it destroyed mice as well as rats, both poisons are very efficacious where rats are concerned No rats could be found in houses thoroughly treated with either poison

The city was divided into six compartments, each in charge of a compounder who had under him a jamadar and four coolies, in addition a few low caste men were employed to remove dead rats and a floating gang of coolies to assist in moving heavy articles for the fumigation of rat-holes Assistant-Surgeon B B Roy, as Special Health Officer, was in charge of the campaign and gave the attention to detail, without which the campaign would have been a failure Every bait set, taken by rats or remaining, and every rat-hole fumigated and stopped was carefully recorded

The general plan was that all six gangs commenced work on the main central road of the city and worked outwards towards the edge There is no doubt that the great majority of the rats escape poisoning by migrating, it is for this reason most important that the rats should be driven outwards, and much care was given to keeping a steadily advancing periphery to the area freed of rats

The work commenced on the 15th of September and was completed on the 8th of January, after this one village close to the city, Sidhari—which had been badly infected with plague in all previous epidemics—was freed of rats as an additional safeguard

During the campaign 1,501,775 baits were set, of which 327,086 were taken, not many dead rats were recovered, only 4,120 are recorded in the compounders' books

About 100 houses were omitted owing to the absence of the owners, no house had to be left on account of the owner's objections, there were a few such objectors, but these were easily persuaded, and the general opinion in the city was distinctly in favour of the campaign, all temples and musjids were left alone for obvious reasons, later we had to attribute one case to infection in a musjid and one in a Hindu temple

Two children who were said to have eaten the baits came under notice, neither of these suffered in any way The expense of the work was Rs 1,878 In January and February 1904, when the city was practically evacuated on account of plague, the loss of income to the Municipality from octroi was in round numbers Rs 1,900, so that the campaign may be said to have been successful, even from a financial point of view, more particularly as expenditure on disinfection and butting in these months was practically nil this year

THE EPIDEMIC

The first case of plague in the city this season occurred on the 5th of November. The patient returned ill from Jaunpur, he eventually recovered but infected his brother who died on November 16th. These two men lived in an area already free of rats and the disease did not spread. On the 18th of November a boy who attended school was attacked with plague and died on the 20th, rats were found to have died in his and the neighbouring houses situated on the extreme edge of the city beyond the limit to which rat-killing had at that date extended, the infection from these rats rapidly spread, extra gangs were appointed and the work of rat-killing rapidly pushed through this infected area which consisted of two mohallas—Bazbahadur and Kot before this was completed on the 25th December, fourteen cases had occurred with only one recovery, after this date the cases continued to occur but not with the same rapidity, from these mohallas many parts of the city were infected, but by this time the campaign was complete and the tendency to spread during January and February was very slight. Early in February there was almost continual rain for some days and crops round the city were being cut in this month it was feared that these two circumstances would lead to an invasion of the city with field rats—this appears to have happened, for between February 10th and February 22nd, dead rats were reported from thirteen houses, the occupants did not in all cases take the advice given them and evacuate, and three cases occurred in these houses.

From the beginning of March the epidemic showed a tendency to relapse to its ordinary character, and though in the early part of March the cases occurred singly and over a wide area, yet the constant finding of dead rats causing fresh centres of infection showed that the good effects of the campaign were passing away. At the time of writing, March 20th, the surrounding crops are all cut, there has been a certain amount of rain, rats are found in small numbers in the city and cases are occurring daily.

RESULTS

The result of the campaign can only be judged by comparing the death rates from plague in Azamgarh this season with previous years and by comparing Azamgarh with neighbouring infected cities this year, Azamgarh district has this year been very high on the list of plague infected districts, and the comparatively small death toll in the city is in my opinion directly the result of the rat campaign.

MONTH BY MONTH PLAGUE DEATHS IN AZAMGARH MUNICIPALITY

	1903-4	1904-5	1905-6	1906-7
November	1		1	2
December	55		11	23
January	333	8	38	19
February	218	39	50	16
March	35	64	126	
April	6	20	47	..

Each year there has been an outbreak that in spite of disinfection, segregation and evacuation, steadily spread with monthly increasing figures until the maximum was reached, then the onset of the hot season (or the determining influence whatever that may be) caused a rapid fall in the number of deaths and the epidemic ceased. This year the epidemic commenced in November, increased in December, by the end of that month the city was as free of rats as our methods could make it, and the number of deaths instead of increasing, as had always been the case, showed a decrease which was maintained for two months. In February the number of deaths from plague in the Municipality is the smallest on record since the first visitation of this disease, and in the first 20 days of March, though the disease is gaining ground, there have been but 30 deaths as compared with 76 for the same period in 1906. It is particularly interesting that the village Srdhan, already mentioned as an annual plague centre and as having been freed of rats in January, has remained quite free of plague up to the time of writing (March 20th).

COMPARISON OF PLAGUE MORTALITY IN AZAMGARH AND NEIGHBOURING INFECTED MUNICIPALITIES IN 1906-07

	Novr	Decr	Jan'y	Feb'y	Population
Ghazipur	5	10	130	406	39,429
Ballia	38	35	58	45	15,278
Azamgarh	2	23	19	16	18,835

The epidemic started in the cities of Ghazipur and Azamgarh in November. The Ghazipur figures show the normal tendency of plague to increase month by month, in spite of all ordinary precautions.

The Ballia figures are not so reliable, as only outlying villages were infected, not the main bazar.

In Azamgarh the infection already noted occurred in November and December in parts of the city not at that time freed of rats, the numbers in January and February show what is to be expected in a city freed as far as possible from rats. The tendency to steadily increase and spread seems to have entirely disappeared.

The comparison of the Municipal with the district figures in Azamgarh show very plainly how the destruction of rats in the former lessens the tendency to a steady rise in the mortality, which is so marked a feature in the district figures.

	Novr	Decr	Jan'y	Feb'y
Azamgarh Municipality	2	23	19	16
Azamgarh District	112	334	994	2,023

GENERAL REMARKS

There is in the account above ample evidence that for a time rat destruction is an effective measure in plague prophylaxis. During the campaign there was evidence that though rat destruction cannot hope to be quite complete, it can be very nearly so if an efficient poison is used systematically and with care.

The Sanitary Commissioner with the Government of India, in his annual report for 1905,

sums up the results attained in the Punjab and elsewhere "The evidence so far as it goes is favourable to rat destruction as an anti-plague measure," he then points out the difficulty, apparently the impossibility of completely freeing a place from rats, but gives an instance of a large village freed, as far as possible from rats, but in which plague broke out accompanied by rat mortality, the spread of the epidemic, however, was extremely slow, and the incidence of the disease slight as compared with neighbouring villages in which rat destruction had not been attempted. The results attained in Azamgarh have agreed with these remarks very closely. The Sanitary Commissioner asks "How near an approach to absolute extermination of rats in a given area is practically possible?" From experience here it can be stated with confidence that an almost complete disappearance of rats in a given town or village is possible, but that rats soon return to take up their vacated habitations. In Azamgarh which is a small city bounded on three sides with a river and with much agricultural land within its boundaries, this return may be expected to be more rapid than in larger and more densely populated cities not so situated.

The thorough fumigation and stopping of rat-holes seems to have destroyed any fleas left behind by the rats, it has been often noted after the migration of rats, on account of plague, that so large a number of fleas were left behind that the natives made complaint of their attacks, even leading questions failed to elicit any such complaint in Azamgarh after the cleaning of the city with poison and the fumigation and closing of the rat-holes.

In concluding this report, I wish to place on record the obligation which is due to Assistant-Surgeon Benoy Bhushan Roy for the painstaking and intelligent way in which he conducted the operations.

There is, in my mind, no uncertain opinion as to the benefits which have been derived from this rat-killing campaign. I have seen four epidemics of plague in Azamgarh, and am convinced that this is the most efficacious policy that has yet been tried.

A Mirror of Hospital Practice.

AN OPERATION FOR ENTROPION

By R. HEARD, B.A., M.B.,
MAJOR, I.M.S.,
Civil Surgeon, Simla.

THE large number of operations devised for the treatment of entropion (including trichiasis and distichiasis) may be taken as an indication of the difficulty experienced in dealing satisfactorily with this condition.

The drawbacks to most of the operations described in text-books appear to be the temporary nature of the relief afforded in many cases, and

the subsequent tendency to gaping of the palpebral aperture and difficulty in evenly approximating the lids.

In most cases of trichiasis the hairs at the extremities of the lids are as much in fault as those in the centre, but the majority of the text-book operations affect, practically, only the central portion of the lid, in their ultimate results.

Take Ait's operation for example its effect can be illustrated fairly well by placing the thumb over the centre of the lid, and raising it slightly (Fig I),

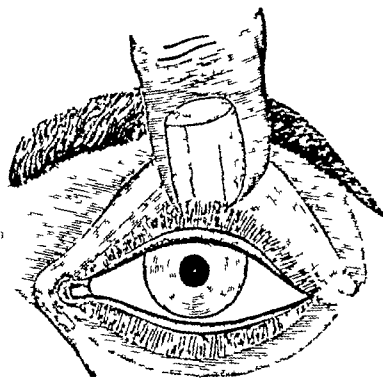


FIG I.

or, by pinching up the skin over its centre, and getting the patient to close the eye. It will thus be seen that the central hairs, alone, are turned out, and the palpebral fissure is made to gape to some extent. If now, instead of lifting the centre, portions of skin be pinched up, simultaneously, near either extremity, or, if the bosses of the slightly separated first and second fingers be pressed upon the lid, near the extremities, the effect is very different. In this case (Fig II) the central portion of the lid is

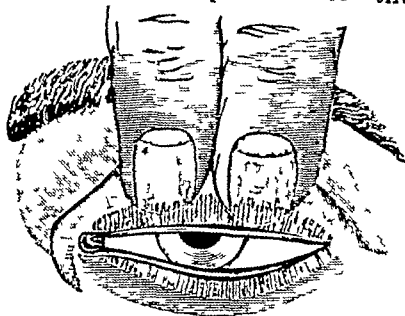


FIG II

untouched, but the whole line of hairs is turned not only outwards, but well upwards as well, while the edges of the lids approximate accurately.

Even in those operations where the tarsal plate is attacked, the central part of the lid is more affected, as a matter of fact, than the sides.

It would seem, then, that, in dealing with these conditions, the principle to work upon should be to attack the extremities, rather than the centre of the lid, and, on this principle, I have devised the operation described below.

The results, in some hundred cases, performed during the year 1904, have been most gratifying, and have left little to be desired. In many of

the cases the tarsal plate was deformed, but this apparently, does not affect the efficiency of the operation

The steps of the operation are as follows —

Snellen's clamp is applied and the lid adjusted so as to expose its edge as much as possible. The bosses of the first and second fingers, of the left hand, are placed upon the lid, as in Figure III, and firmly pressed in an upward and

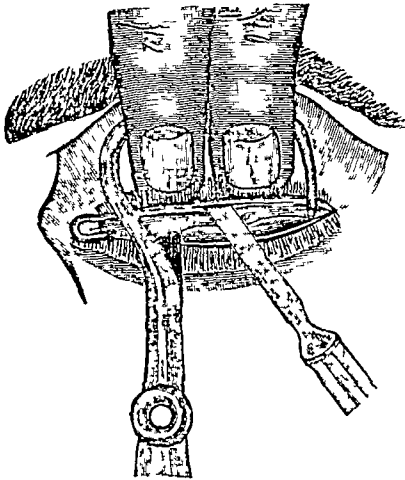


FIG III

backward direction, so as to bring the hairs well into view and into a straight line. In this position the free border of the lid is split, from end to end, to a depth of about 7 mm, taking care to keep the incision well behind the hair follicles. The edge of the anterior flap, containing the hairs, is picked up, and steadied by a fixation forceps, while a second incision is made, from end to end, through the skin only along its anterior border, parallel to and 2 mm from the line of hairs. The edge of the skin forming the upper border of this incision, is now picked up by a couple of fine toothed clip-forceps, by means of which an assistant puts the skin of the lid upon the stretch, by traction in a downward direction to facilitate the making of the third incision. The third incision is a curved one, shaped not unlike the curve of the free edge of the soft palate and uvula, it is made through the skin only, and extends from one end to the other of the second incision, the height of the curves depending upon the effect required. The forceps are removed, the piece of skin, contained between the two skin incisions, is dissected off, leaving a raw surface, as represented in Fig IV.

The edges of the skin incision are brought together by seven horsehair sutures, the central one being put in first, those through the curves second, and those at the extremities last, and, after the clamp has been removed, as, by so doing, then insertion is facilitated and then exact position the better judged. The suture should take a good hold of the edge of the lid passing amongst the hairs if necessary. They are tied by a double twist only, the upper ends

being cut off fairly long, to facilitate subsequent removal, while the lower ends are cut off close

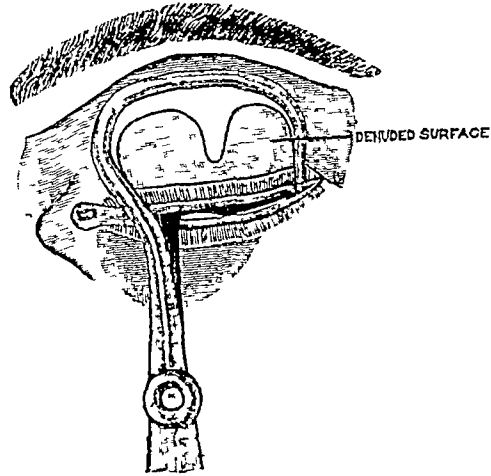


FIG IV

to the twists. Any hæmorrhage is arrested by pressure, and the clot removed from the edge incision, which is left open. A semi-circular pad of gamgee tissue is applied over the orbit and the everted hairs, and retained in position for 24 hours, by a bandage. The stitches are removed on the fourth or fifth day.

The immediate effect of the operation is a perfectly straight edge, with the lashes turned well outwards from end to end. There is no gaping of the palpebral fissure, and the lids meet perfectly.

If, during the splitting of the lid, at the commencement of the operation, some of the follicles are accidentally divided and remain in the conjunctival portion of the flap, they should be dissected out, as otherwise, a few hairs may appear subsequently along the line of scar.

The difference between this operation and that known as the "Ait-Jaeschke" is evident. The results of the latter operation have not been found altogether satisfactory, because, as I believe, the principle of the operation is not sound. Modified in the way that I have explained, *i.e.*, making the upper incision with a double curve instead of a single one, thereby influencing the outer and inner thirds of the lid more than the central portion, and securing perfect approximation of the lids when closed, the operation is very effective.

Recently I have had made by Messrs Down Bros, of London, special clamps for the operation which facilitate the making of the curved incisions.

MELANOTIC SARCOMA AND "SARCOMA TOUS MELANOMA"

BY O. ST. J. MOSES, M.D., F.R.C.S. (ED.),
CAPTAIN, I.M.S.,

Civil Surgeon, Barrisal

THE case I am about to describe is one full of interest from the point of view, not only of pathology, but also of diagnosis and prognosis in their relation to one

another and to surgical treatment. On July 21st, 1906, Fulia, a married Hindu woman, 30 years of age, native of Durbunga, wife of a local sweetmeat vendor, came to hospital for advice on account of a tumour situated in front of her right eye and growing from the lower eyelid. Her main cause for complaint was the intense pain from which she suffered, night and day, for which she could find no relief, and which, developing recently in association with the growth, extended over the entire right side of her face and head. The inability to see did not trouble her much, as she had become accustomed to doing without the use of her right eye, and the inconvenience due to this sank into insignificance in the presence of the terrible pain to which she was a martyr, and which rendered her well nigh distracted. From the "previous history" of her case, as obtained from the patient, it appeared that the trouble commenced about a twelvemonth before, in a tiny pigmented spot of the nature of a raised mole, situated at the mucocutaneous junction of the right lower eyelid, beside the punctum lachrymale, causing no inconvenience at the time, increasing in size somewhat slowly at first, but taking on later a more rapid growth and coming to be associated with the painful element in her condition. She gave no account of previous eye disease, or of any specific ailment, and denied any taint in her family history. She had to a certain extent the appearance of a person with a strumous constitution, although beyond the mere appearance there was nothing to indicate the actual presence of such. There was no circumstance worthy of special note in regard to her habits, mode of life, diet, or religious observances, and alcohol was said to be completely out of the question, as well as narcotics, for she denied indulgence in these. The only other points of interest in her personal history were that she had lived the greater portion of her life in her native place, from whence she had come over to Dhubri only nine months previous to the date to which this history refers, and further, that she lost her first child in its infancy, from some cause unknown to her, while her only other child was living and in good health.

The woman was at once admitted to hospital, and she expressed a desire for the speedy adoption of some radical measure that would give her relief from her fearful sufferings. Photophobia and lachrymation were markedly present, and both eyes were almost entirely closed up as the result of a tumefaction of the conjunctivæ and, on the right side, owing also to the presence of the tumour. All these, and perhaps to a certain extent also the pain, appeared to be due to an affection resembling, very closely indeed, the phlyctenular or strumous conjunctivitis and keratitis, which occurs more frequently in children,—(what Horner calls "eczema of the conjunctiva and cornea,") or, more precisely, the multiple or military variety of that affection, the "eczematous conjunctival catarrh of children" (Horner). The new growth itself was solid, about the size of a pigeon's egg, dark in colour, and ulcerated on its surface from whence there exuded a very foul smelling, irritating, mucopurulent discharge, mixed with lachrymal secretions. The use of local applications of a cleansing and soothing nature, of blisters over the temple, and of bromide and chloral internally, proved equally futile in either causing benefit to the tumour or diminishing the pain to any appreciable extent, although they did undoubtedly serve the purpose of reducing the swelling of the conjunctivæ and rendering the surface of the new growth less foul than it used to be.

That melanosis entered into the composition of the affection there could be not the slightest anxiety, for the tumour itself was deeply pigmented, while the skin of the face, arms and chest was covered with innumerable, small, round patches of pigment, resembling freckles, a shade or two darker in colour than the brown skin generally. That there was a certain element of malignancy in the nature of the trouble, as it existed at this time, there appeared to be very little doubt, for, in spite of the fact that there were no enlarged

lymphatic glands in the neighbourhood, no signs of secondary deposit and no marked degree of cachexia, there still were to be found points in the latter part of the history of the case, such as sudden rapid growth, ulceration of the surface, exudation of a foul and irritating discharge, general constitutional disturbance and intense pain, which indicated the presence of the malignant element. However this might be, it seemed quite manifest that removal of the tumour was the first step to undertake in dealing practically with the case. Accordingly on July 26th the patient was operated on under a general anæsthetic, as it was difficult to gauge beforehand what extent of surrounding tissue would require removal in the proceeding. The tumour was removed along with as much tissue around as it was found possible and deemed desirable to take away. The operation itself was an exceedingly simple matter, requiring no special notice with regard to any of its steps, except perhaps the mere mention of the fact that a solution of the hydrochloride of adrenalin (1 in 1,000) was found very useful in checking the hæmorrhage from the tumefied conjunctiva. Recovery from the effects of the operation was steady and uninterrupted.

The tumour, when removed, proved an object of great interest. To the naked eye it had the appearance of a firm, dark blood clot that had begun to organize about its centre. It was preserved in formalin (1 in 10) and sent to Calcutta, to Major L. Rogers, M.S., who, after subjecting the specimen to a pathological analysis, very kindly informed me on August 2nd, 1906, that the tumour was "found to be a melanotic sarcoma, under the microscope."

Of late years dermatologists have recognized and described a benign type of melanosis, spreading generally from a congenital mole, presenting at first no signs of malignancy, and at this stage showing, under the microscope, merely a deposit of pigment in the deeper layers of the cutis vera. Recently, too, it has been made out that in the middle of such a patch, elements of a malignant nature may come to develop, sometimes carcinomatous but more often sarcomatous, and further, that such tumours are not rapid in their progress, though, if allowed to remain, they finally become disseminated. The case of the woman, Fulia, seems very clearly to illustrate this sequence of events. One of a number of small pigmented patches or moles, of long duration and covering mostly the exposed parts of this woman's person, suddenly takes on a tumour-like growth, about the middle of the year 1905. The stimulus to this increased activity in the part, is probably an irritant of a simple nature, for the rate of growth is at first slow, and there are no enlarged emphatic glands or other signs of malignancy,—in fact, the condition is one of melanosis of the benign type. At a later period in the course of the trouble, however, the malignant factor supervenes, and the hitherto benign melanosis is converted into a malignant tumour whose rate of growth is comparatively more rapid than that of the foregoing condition, and which at this stage corresponds histologically to a melanotic sarcoma. It is exceedingly difficult, nay almost impossible, to conceive that the growth which progressed at first so slowly, without signs of malignancy, and which developed so steadily, without manifestations of secondary deposit, could have been malignant from its very commencement, and, moreover, of the nature of perhaps the most malignant of all new growths, a melanotic sarcoma! Erichsen says that "melanotic sarcoma is one of the most malignant of all forms of tumour," and that "it may be broadly stated that if a melanotic sarcoma reach the size of a filbert, secondary deposits have in all probability occurred, and no local treatment can cure the patient." Indeed, far from the condition having been of the nature of a malignant tumour from the commencement of its existence, the fact that no secondary deposits had occurred with a melanotic sarcoma of the size of a pigeon's egg, would appear to indicate that the malignant

or sarcomatous element supervened late in the history of the tumour, presumably late enough before the operation, as it were, to give no time for the occurrence of secondary deposits. Further, it would seem that the operation was undertaken early enough, not to say thoroughly enough, after the supervention of the malignant factor, to entirely do away with the risk of recurrence so far, now a matter of fully six months. In the face of what Erichsen tells us, an opinion in which he is supported by most authorities, it would be equally difficult to believe either that secondary deposits would have been wanting or that local treatment would have been of so much avail, with a tumour of a year's duration, which had reached the size it did, and yet had been of the nature of a melanotic sarcoma throughout, or indeed for anything more than a very brief period of the latter part of its existence. Of course, as to the chances of recurrence of similar malignant disease at a later date in one of the other numerous pigmented patches which my patient continues to carry about on her skin, considering the occurrence of such complication once, it would be distinctly hazardous to make a favourable prognosis, although I can safely say that if a recurrence were to take place, it would not be for want of removal of the original seat of malignant development. In the meantime, however, there is the satisfaction one feels in thinking that the nature of the melanosis is primarily benign, and that the malignant element is probably not an essential one in the condition. From the point of view of pure pathology therefore, distinction might be drawn between the melanotic sarcoma and what might well be termed to "sarcomatous melanoma." For although in every case the sarcomatous element deposits itself, primarily at any rate in tissues of the body normally containing pigment, the latter of the two terms may be used to denote such cases as the present one, where the affected part at first takes on a simple tumour-like growth, in which the presence of melanin in increased quantity is a characteristic feature throughout its existence (melanoma)—while the onset of the malignant (sarcomatous) element is a secondary, possibly a late, development. It may be urged that this suggested distinction in nomenclature constitutes a mere ploy upon words, or at best involves a point of mere theoretical interest, concerning pathology pure and simple. But this is not quite the case. On the difference in the pathology of such tumours, that is, on the diagnosis between the melanotic sarcoma and what I have ventured to term, the 'sarcomatous melanoma,' will depend very largely on the prognosis that may be made and the local surgical treatment that should be adopted. The points to guide one in the diagnosis of a case of melanotic sarcoma are laid down in every text book on surgery, the prognosis and the chances of success to be expected from local treatment, are bad. But in the other variety of case, where the sarcomatous development may be late, the diagnosis will depend largely on the slow rate of growth of the tumour, as well as the absence of signs of malignancy, at an early stage, whereas the prognosis is favourable in comparison with the former affection, while so far as treatment goes, the surgeon must never despair, but must always keep in mind that at whatever stage of the tumour growth the case comes into his hands, he must, if possible, operate and, moreover, operate as early as practicable, regardless of the size of the neoplasm, provided he finds no apparent signs of secondary deposit present. Needless to say that as in the case of melanotic sarcoma, it is wise to make the excision extend as wide of the tumour as possible.

In the case of the patient Fulia, these methods were of remarkable avail. I saw the woman last a few days ago, looking in better health than she had ever done since I first saw her, and able to attend to all her household duties perfectly well. In conclusion, I take the opportunity to pay a tribute to Mr H. Lyndoh, L.M.S., Assistant Surgeon, whose help during an operation did much to contribute to the welfare of the case.

TWO SURGICAL CASES

By M. H. THORNELEY,

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CASE OF FATTY TUMOUR OF THE HAND

AN infant, eight months' old, Hindu parentage, was admitted into the Darbhanga Raj Hospital on 22nd December 1906, for a tumour of the right hand and forearm larger than the child's head. The parents stated that at birth there was a small swelling about the size of a betel-nut over the root of the thumb. It grew gradually to its present size, which is larger than the child's head. Under chloroform an attempt was made to save the hand and remove the tumour by dissection. The tumour by its size had caused partial dislocation of the wrist joint, and elongation of the flexor tendons of the hand. The surface left uncovered by skin after removal of the tumour was very extensive, and this fact in conjunction with those just mentioned made it appear to be the wiser course to amputate through the forearm, which was accordingly done.

Section of the tumour showed it to be made of firm fat with a fibrous stroma and capsule. It appeared to have commenced from the fat on the thumb side of the palm. Its rapidity of growth, the large size it attained, the early age of the patient, and the unusual situation for a fatty tumour make the case one of clinical interest.

CASE OF STRANGULATED INGUINAL HERNIA WITH GANGRENE OF THE INTESTINE

A boy of ten years, Hindu by caste, was admitted into the Banwar Lal Hospital, Laheria Serai, on the 31st December 1906, with a left-sided strangulated inguinal hernia dating from two days previously. An operation was done at once. The intestine was found gangrenous at its lowest part over an area of about 2 inches by 1 inch. The rest of the knuckle of intestine was inflamed, but not in a very bad state. The condition of the patient contra-indicated more extensive interference, the constriction at the neck of the sac was divided, the gangrenous area of bowel snipped away, and the knuckle of intestine left *in situ* for the fæces to drain. The next day but one, the child having rallied and his condition having improved by the drainage of the bowel, the intestine was excised. About four inches in length were removed, the cut ends were sewn together with Czerny Lembert sutures, and the bowel replaced into the abdominal cavity. The mesentery was not removed—where it was divided from the intestine, sutures were applied. Three days later fæces were passed per anum. On the 7th January the hernial sac was excised, and the peritoneum and the opening in the abdominal wall sewn up. A stitch abscess formed later, but the wound was healed by the beginning of February, and a firm abdominal wall resulted.

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BLACKWATER FEVER

THE LIVERPOOL SCHOOL'S VIEWS

OUR readers are aware that the Planters' Association of the Duars have appealed to the Government for a special inquiry to be instituted into the nature and prevalence of what is called blackwater fever in the Duars, and it is a tribute to the fame which the new school has already achieved by its many scientific expeditions that the members of the Association naturally and almost inevitably as newspaper readers asked for the assistance of the school of Tropical Medicine in Liverpool

It may, therefore, be of interest, if we refer somewhat fully to the most recent article on the subject of blackwater fever, which comes from the pen of Dr J W W Stephens, one of the ablest professors of the Liverpool Tropical School

Our readers will remember that Dr Stephens, accompanied by Dr Christophers (now Captain, R M S), and Capt S P James, R M S, came out some years ago to study malaria and blackwater fever, and their work is embodied in a series of well-known reports to the Royal Society

In the new edition of Allbutt's *System of Medicine* (vol II, part II), Dr Stephens has a well-written closely reasoned article on blackwater fever, which, as it may fairly be claimed to represent the latest views of the Liverpool School on this fell disease, is worthy of the attention of all who are interested in this subject in India

He begins by a brief note on the geographical distribution of blackwater fever, which is common in many parts of Africa, North and Central America, but is only known in a few parts of India, viz, the Jeypore Agency in Madras, the Canara District, in parts of Assam and in the Duars and Terai "Certainly" (writes Dr Stephens), "over large areas in India it is absent or very rare"

Dr Stephens then comes to the causation of this complaint, and in approaching this vexed question he confines himself to known facts, rigidly excluding hypotheses Let us, however, assume for a moment that blackwater fever is malarial in origin, how do the facts fit this view?

Italy and Sicily and we may add many parts of India are malarial, but there is no blackwater fever But there is malaria and malaria In North Italy (and in many parts of India), malaria is a very mild disease, to the Europeans in Africa, however, malaria is a deadly scourge Again, in India we have learnt to live carefully, whereas in Africa, many Europeans live in what Dr Stephens calls "primitive conditions of civilization and comfort" Again, in India, generally, Europeans are usually attacked only by the benign tertian parasite, in Africa generally, it is the malignant parasite which is the predominating species This leads Dr Stephens to the enunciation of the axiom, "that the intensity of malaria displays itself in blackwater fever," and he also says (and we must in this agree with him) that "the distribution of intense malaria and blackwater fever correspond very closely" The intensity of the malaria is the point to be remembered, and this disposes of the commonly raised objection that the geographical distribution of malaria and of blackwater fever are not the same

The other objection to the effect that in blackwater fever "the parasites of malaria are seldom found" is disposed of, when we remember, first, that the statement is not altogether true, secondly, that quinine has always been previously administered, and thirdly, that by the other tests for malaria (the presence of pigmented large mononuclear leucocytes, and the increase in the percentage of large mononuclear leucocytes), the existence of that disease was found in 93 per cent of 16 cases of blackwater fever, while the parasites were only found in 12 per cent

Again, when it is said that the parasites are seldom found in cases with hæmoglobinuria, this statement is of little worth unless the period of the disease in which the blood examination is made is recorded, for in a series of 95 cases examined by competent observers parasites were found in 95 per cent of cases examined before the onset of hæmoglobinuria in 61 per cent on the day of hæmoglobinuria, and in only 17 per cent the day after hæmoglobinuria

It is exceedingly difficult to find a flaw in the above reasoning, and it seems to compel us to recognize a malarial origin for hæmoglobinuria

So much then for the connection between blackwater and intense malaria, it next remains to discuss the exciting cause of this formidable symptom or rather complication

Dr Stephens, as is well known, follows Tomaselli in considering this symptom to be due to quinine, in fact, blackwater is a quinine intoxication occurring in a patient suffering from an intense form of malaria. This view has, we know, been vehemently denied, but Stephens refers to cases in which patients who knew that the use of quinine would precipitate the occurrence of blackwater, nevertheless, submitted voluntarily to the experiment, and "it has been conclusively shown that in such cases quinine can and does induce hæmoglobinuria."

Of course, it is a matter of common experience that quinine, as a rule, has no such action, "but to deny the possibility of its provoking hæmoglobinuria is no longer justifiable," as Dr Stephens says, "the most convincing proof is the observation of an actual case when the patient who may be progressing favourably after the initial attack, suddenly hæmoglobinuria again supervenes, the only changed condition having been the administration of quinine a few hours previously."

Admitting that it is proved experimentally that quinine has induced hæmoglobinuria, it is useless to press the fact that quinine is daily administered to thousands without any such result.

To sum up—Dr Stephens writes—

"I regard the condition of the blood necessary for the development of blackwater fever, *i.e.*, of an acute hemolysis, as determined by exposure to malarial attacks of a greater or lesser frequency, that in the majority of cases, if not in all, the initial attack is associated with the definite occurrence of parasites in the blood and that under such conditions, quinine, not necessarily in large doses, is able to induce an acute destruction of blood cells. This factor, *viz.*, quinine, and no doubt the hæmolysis itself is the reason why parasites disappear so rapidly during an attack. It is possible also (as Plehn holds), that a kidney lesion is one of the essential factors. The etiology of blackwater fever may be summed up by saying that it is malarial in nature, *i.e.*, it can only occur in those who are either suffering from, or have been recently infected with malaria, and that the onset of the disease is induced most commonly, though not invariably, by quinine."

We at once admit that we have all along been opposed to the view that blackwater fever was a form of malaria or was induced by quinine. We inclined to the opinion that research would in time show that this fever was due to a special parasite and that it was in this way

akin to the red water fever or Texas fever of cattle, with which it has many analogies.

We admit also that on our present knowledge it is very difficult to rebut the views so ably and logically advanced by Dr Stephens in the article which we have above reviewed. The points which, to our mind, are most convincing are first the admitted experimental proof that quinine can cause hæmoglobinuria, and the limitation, now put forward, that it is only where intense malaria prevails that blackwater exists. As regards the share of quinine, we reiterate our previous statements that quinine has been for years widely used both in large and small doses, and both therapeutically and as a prophylactic, yet blackwater fever is very rare and in India is confined to a few districts. We may agree that in these districts and specially in the *terai* an intense form of malaria prevails. We should, however, point out that Dr Stephens does not actually say that the malarial infection must needs be of the "malignant" type of parasite, though this is perhaps implied by the references to the severity and "intensity" of the malarial fevers in places where hæmoglobinuria as a complication is found.

We confess that we have been largely persuaded to accept a malarial and quinine origin for the disease by Dr Stephens' article, but we think that there is another factor which is necessary, and that is, as Plehn has pointed out, a *kidney lesion*. On this understanding there are three factors, *viz.*, repeated or severe malarial infection, the use of quinine in small or large doses, and a weakness in the kidneys. In this way the state of the kidneys would have the same prognostic significance as it has in a case of cholera, for we all know clinically that where the kidneys are unsound the chances of recovery from cholera are very bad.

We commend this suggestion to our readers. If this third factor is a real entity, then the question of the administration of quinine in a case suspected to be blackwater fever will depend largely upon the result of a microscopical and chemical examination of the urine.

THE OBSERVATION OF THE OPSONIC INDEX AND ITS UTILITY IN DIAGNOSIS AND THERAPEUTICS

THE question of the immunity of the organism against the onset of disease, is one which has always been discussed in terms of

the most abstruse nature, and confusion and error have resulted in the endeavour to form an accurate mental picture of the extremely complex phenomena involved in the process.

The earliest attempts to explain the fundamental facts of immunity, began, we may say, with the theory of Pasteur and his "*Theorie d'épuisement*," or exhaustion theory, a little later, Chauveau formulated his "*Theorie de la substance ajoutée*," and upheld the possibility of immunization by the soluble products of bacteria.

Theories such as these, which neglected the factor of the host, which, after all, is the fundamental one, were doomed to criticism and subversion. From the observations of Langhans, Haeckel and Gengou, the phagocytic theory was built up by the genius of Metchnikoff, to this the answer soon came in the humoral theory, formulated by Behring and elaborated by Buchner, *ie*, the capacity of certain substances in the blood (alexins) to destroy bacteria. The theory of Pasteur was read anew by Ehrlich in his side-chain theory, or the conception of the existence of suitable receptors in the cells of the body. The work of the next few years resulted in the elaboration of numerous hypotheses as to the nature of the alexins, and new substances were discovered in the blood as bacteriolysins, agglutinins, precipitins, hæmolysins, stimulins, etc., concerning which the scientific warfare carried on by the rival schools, of Munich led by Buchner, of the Paris school led by Metchnikoff, and of that of the followers of Ehrlich, only served to bewilder the therapist, who saw, in his ignorance as to the ultimate constitution and chemistry of the body cells and their fluids, *in vivo*, an impossible barrier to any practical working basis. Then came Leishman, with a method of observing phagocytosis outside the body, and a method less prone to error in ascertaining the conditions favouring its development, *in vivo* at least. Next came the epoch-making papers of Wright and Douglas, who shewed that the serum plays more than a passive part in the process of phagocytosis, and that the leucocytes alone cannot ingest and destroy any bacillus in the blood stream, unless there is present in that stream, some substance, which so modifies the bacilli, as to render them fit for ingestion, this substance he calls opsonin.

This opsonin is destroyed by heating to 60° C. (*ie*, thermolabile), but after the opsonin has united with the bacteria, the mixture of serum

and bacteria can be heated to 60° C. without abolition of the opsonic effect. Bulloch has shewn that the opsonin is a simple substance, thus differing from the other anti-bodies hitherto discovered in the blood, which are more or less complex such as lysins leaving a complement-like body in the supernatant fluid after digestion with the bacillus.

The suggestion of Wright as to the specificity of the opsonin in the blood has been clearly proved by Bulloch and others, and it is now established, that there is present for each bacillus, a specific opsonin in the blood, to the presence of which the body mainly owes its immunity from infection by the organism, *ie*, there may be a large amount of tuberculo-opsonin in any person with a very small quantity of staphylococcic-opsonin and *vice versa*, etc. Further, Wright has shewn that the liability to infection from any bacillus is due to and consequent upon a diminished quantity of that specific opsonin in the blood.

The mere discovery of this opsonin would have availed us nothing, if the genius of Wright had not devised a method for ascertaining the amount of this substance in the blood, and comparing its curve in health and disease. He thus gave us a working hypothesis, in which he notes, that this opsonin, which makes it possible for the leucocytes to ingest and destroy the bacilli, varies greatly, when the organism is suffering from an infection by that bacillus and when in health.

His original experiment was somewhat as follows, and he thus demonstrated that the active agent was in the serum, and not in the corpuscles —

1	A's W B C, 3 parts A's serum, 3 parts Staphylococcus culture, 1 part	In each corpuscle,	257
2	B's W B C, 3 parts B's serum, 3 parts Staphylococcus culture, 1 part	In each corpuscle,	130
3	A's W B C, 3 parts B's serum, 3 parts Staphylococcus culture, 1 part	In each corpuscle,	130
4	B's W B C, 3 parts A's serum, 3 parts Staphylococcus culture, 1 part	In each corpuscle,	282

This idea was followed up, and it was found that it was possible to bring about a similar series of changes in the blood by inoculating with a suitable preparation of a bacillus, to that which would be produced in that blood after recovery from infection by that bacillus.

From this to the platform of practical therapeutics the step is but a narrow one. If the recovery from a disease is due to the destruction of the bacillus in the body by phagocytosis, then the amount of opsonin must somehow have been increased by the presence of the bacillus in the body, and further, had that amount been from the outset in the systemic circulation, the infection could not have occurred.

Infection by the invading microbe may be (1) *acute*, in which case either sufficient of the anti-bodies, "antitoxins, opsonins, etc.," must be rapidly elaborated in the systemic circulation to destroy the bacteria neutralizing their toxins, in which case the body will recover, or sufficient time is not given for the formation of these anti-bodies and death ensues, or (2) it may be *chronic*, in which case there is only a small absorption of the toxin owing to its being strictly localized, and thus only a small stimulus is given to the blood laboratory to provide a limited amount of the anti-substances. So in acute infections we can do but little, except inoculate the patient with anti-bodies produced extra-corporeally as in diphtheria and so increase the available resources of the organism in combating the disease, while in chronic infection we must stimulate the blood itself to produce in large quantity the anti-bodies by graduated doses of the toxins, and as it is difficult to separate the toxins from the bacilli themselves, both are introduced into the body in the form of a sterilized emulsion of the bacillus.

Wright then gave small doses of the bacillus and its toxins to healthy persons, and he found that he could raise their power of phagocytosis by increasing the amount of opsonin present.

In some patients suffering from an infection, this was followed by an exacerbation of the symptoms, a fact which called for explanation, and by a series of the most accurate and painstaking observations he found that the dosage was all-important, *i.e.*, that in all cases the curve indicating the amount of opsonin present shows a dip indicating that a certain quantity has been used up, this is followed by a marked rise and then a continuance on a higher level after perhaps a slight fall.

No matter how small the dose is, still the curve is of the same character, but in cases where the dose is larger, the dip or "negative phase" is more prolonged. If a second dose is given after the second fall, the curve is repeated with a still higher permanent level. If a second dose be given during the negative phase, then it is possible to accumulate negative phases, and undoubtedly the disastrous results of Koch's tuberculin inoculation were due to this. The accumulation of positive phases, we have seen, is possible to a certain extent, though the response is not unlimited.

The success seems to vary considerably with various bacilli, the response to well-judged inoculations of a coccal vaccine is good and well maintained, while that to a tubercular vaccine is short-lived and soon reverts to its original level. By the use of an appropriate dosage we can get one positive phase followed by another with only a very short slight negative phase between.

The estimation of this curve denoting the amount of opsonin present, must then be determined as often as possible so as to avoid imposing one negative phase on another.

This amount of opsonin present in the blood of the patient is calculated by comparing the power of phagocytosis of white blood corpuscles in the presence of serum from that patient with the phagocytosis of these same corpuscles in the presence of serum from a healthy person. The phagocytic power of the healthy person is assumed to be one, while the relation of the patient's phagocytic power to this is termed the Opsonic Index of that patient with regard to that particular bacillus, thus —

	With control serum	With patient's serum	Index
Bacilli in 50 cells	200	100	$\frac{100}{200} = \frac{1}{2}$

The method of estimating the amount of opsonins in the blood is by no means beyond the power of the ordinary observer, nor is the apparatus either very expensive or extensive, while the objects to be gained in research and in therapeutics are of so great moment and so alluring is the prospect in view, that the initial outlay, labour and patience spent on the study of the rôle of the blood fluids will be more than compensated for.

The apparatus necessary is—

1 *Steriliser*—This may be made for hot air by constructing two tins, one inside the other with a Primus stove underneath, this will maintain a temperature of 300°F for hours if needed

2 *Incubator*—Readily made out of two tins as before, one inside the other with a space for water in between; this will not vary more than a few degrees if carefully looked after, and will suit the purpose admirably

3 *Centrifuge*—This can be obtained for 30 or 40 rupees and works well by hand

4 *Glass capsules for blood with capillary ends*—Glass capillary pipettes with or without rubber teats

Glass slides and cover glasses

Sundries, as fine emery paper, pencils for marking glass, etc

The fluids we have to obtain are—

1 A fluid containing washed white corpuscles

2 A specimen of the serum to be tested

3 A specimen of a control serum

4 An emulsion of the bacillus with which the serum is to be mixed

1 The white blood corpuscles which are to be used throughout the experiment may be obtained from an operation case or from any healthy person's finger as follows—Fill a tube which contains about 5 cc with 1.5 per cent citrate soda solution and allow the blood to flow directly into the tube to prevent clotting. Place the tube in the centrifuge for about 5 minutes and pipette off the supernatant fluid, replace with physiological salt solution and again centrifuge, syphon or pipette off the fluid and placing the tube on a slant, draw into a capillary pipette, the washed corpuscles which are floating on the surface of the red cells beneath.—(In doing this make for the edge of the tube and thus avoid going too deep and missing the white cell layer.)

2 For the serum, take two blood capsules, and after pricking the finger, fill the lesser limb of one capsule with blood of the patient and that of the other with that of the control, seal both ends in the flame and centrifuge until there is a clear layer of serum above the red cells in the longer limb of the capsule, the glass capsules can then be broken in two and the serum withdrawn at leisure

3 The emulsion of the bacillus has now to be prepared, and this will vary in technique according to the specific organism. In the case

of *Staphylococci* a 6 to 12 hours growth on agar is taken, and a 1 per cent solution of NaCl is poured into the tube, and a turbid fluid is thus prepared, which is then centrifuged in order to throw down any clumps which may be present. Care must be taken to have this emulsion thin enough, as, if the bacilli are very numerous, so many will be ingested that the subsequent count will be a difficult matter. It is convenient for the regulation of the dosage that the emulsion be standardized—this can readily be done by mixing with an equal volume of normal blood and comparing the number of bacilli after staining, with the number of the red cells—the number of the red cells is known per cmm, thus the number of the bacilli can be calculated. The exact appearance of opaqueness of the emulsion, indicating that a proper number of bacilli are present, can only be learnt by practice

In cases of dysentery, cholera, etc., the specific bacillus may be isolated from the stools directly, or by inoculation into a guinea-pig and cultivation from the heart blood

In tubercular cases, as lupus, phthisis, etc., the emulsion may be made from the growth of the *B. tuberculosis* on glycerinated potato which is ground up in an agate mortar with a little 1 per cent saline and centrifuged. This then is sterilized and put up for use in sealed capillary tubes

The necessary fluids are now ready and we can proceed with the experiment as follows

Take a capillary pipette and having made a mark near the end to denote an arbitrary volume, draw up into the pipette three volumes of the washed white cells, then an air bubble to mark the volume exactly, then one volume of the bacterial emulsion, then another air bubble, then three volumes of the serum to be tested. Mix thoroughly by squeezing out into a watch glass and having aspirated again into the pipette, seal the end in the flame and place in the incubator for 15 minutes at 37° C

Prepare another pipette containing the control serum and place in the incubator with the former

Squeeze out the contents of each on to a slide, fix and stain with the appropriate stain (the surface of the slides will have been rubbed with the finest emery paper to prevent the white cells from being drawn to the edge as the film is being made, and thus obscuring a clear count of their contents).

Count the bacilli inside at least 50 cells of each slide and the ratio of the numbers of ingested in the control, and in the patient's serum-digested cells will be the index as noted above.

The opsonic index then is determined and the condition of the resisting powers of the patient to the infection has then to be deduced. As recently pointed out by Bunch, if the case be one of tubercle and the tuberculo-opsonic index be as low as 8, there is reason to believe that this low index precedes infection, or is the actual cause of it, while, if the index is above normal, infection has probably taken place.

In recent acute cases, however, the index is usually low as the focus of disease has not been shut off by fibrous or granulomatous tissue (especially in lung disease), and the toxins are being absorbed into the system, giving a superimposition of negative phases. If the tubercular lesion is of a more chronic nature, the auto-inoculation that goes on is small, and then there is time given for the establishment of a definite positive phase, hence in all cases it is important if we want to aid the protective mechanism by inoculation, to so space out the intervals of these inoculations, that we run no risk of further straining it.

In phthisis, so far little good has been effected during the stage of acute disease when the opsonic index is fluctuating from day to day, showing that auto-inoculation is going on and producing constitutional disturbances. In such cases it would seem advisable to wait until such auto-inoculations have ceased and until the opsonic index remains more or less constant.

It would be impossible to do more than hint at the cases suitable for this line of treatment, as up to quite recently, only subacute conditions as empyema, acne, tubercular glands with low indices, have been regarded as its sole province, but a cure has just been reported in a patient with ulcerative endocarditis (coccal) by a course of this treatment, and there is no reason why, as our methods improve, all acute diseases may not be treated in this manner, as it is not certain that the tested blood is representative of the whole of the blood of the body, for, as Wright has shown, *bacillus typhosus* will grow in the spleen but not in the heart blood itself. So, too, with *M. Maltensis*, the circulating blood is powerfully bacteriolytic, while that of the spleen is not so. Again, the fluids of the pus in coccal and tubercular abscesses contain no opsonins, although the blood of the patient has

an index considerably over one, yet when these abscesses are opened, the lymph within 24 hours flowing from the wound is rich in opsonins. The attention of the surgeon will be drawn to these facts, and it would appear that here we have an additional weapon to the knife in the cure of surgical cases. We may delay operating until the index has been raised by judicious inoculation, and so minimize the risk of producing a general infection from a local one and in cases of tubercular glands, joints, etc., we may operate at the time of the positive phase so as to provide for all the healing power at our disposal and lessen the chance of recurrence. The necessity of establishing the facts with regard to any differences in the reactions of the blood serum to various organisms, of the European, as contrasted with the Asiatic, will appeal to all as an urgent one. The knowledge of the increased alkalinity of the Asiatic's blood and its increased coagulability has made little impression on us all as physicians as, so far, we have not modified our system of therapeutics in such a manner as to meet the requirements of their altered serum or plasma, in this connection may it not be possible that the position of low repute which our system of medicine has in the minds of the vast majority of the inhabitants of this country, is due to the want of success which is consequent upon a neglect of the first principles of a different metabolism requiring a change in practical therapeutics to give us the best results.

That there are great differences (alluded to above) in the grosser chemical properties of the plasma is certain, and it would not be astonishing, if associated with these, were profound differences in the more delicate and complex substances (as opsonic factors) in the blood, on which depend the greater or less susceptibilities of the two races to certain diseases prevalent among them. With regard to this, it is interesting to note that some recent researches have shown that the opsonic index of several Indians towards *Staphylococcus Aureus* has worked out 15, while the index of the same men towards a dysentery bacillus of the Shiga-Kiuse type is only 6 (a healthy European taken as unity). These facts are significant, and surely the time has gone by for us to put differences in susceptibilities to disease, down to climate, heredity, etc., when we have accurate and scientific methods at hand to determine wherein these differences lie.

We would strongly urge the younger generations of the Service, who come out to India skilled in the modern technique of bacteriology and the microscope, not to leave the investigation of such methods to the few, but to use the latter as an adjunct in diagnosis and in the light of this new method, to make the field wider for treatment. The material for work is large, dysenteries, cholera, plague, are crying for investigation, and it would seem a thousand pities if this material, which scientists all over the world, would welcome with eagerness, is not to be made to yield up its treasures to us out here to be of the greatest use to science generally, and to serve to keep up the high reputation of the Indian Medical Service as the premier scientific service of the world.

Current Topics.

THE PREVENTION OF MALTA FEVER

IN the March number of the *R A M Corps Journal* there is a valuable article by the Editor, Colonel D Bruce, FRS, on the epidemiology of Malta Fever, which, as the existence of this disease in parts of India is now generally admitted, is of considerable interest to our readers. The *R A M Corps* may legitimately lay claim to not only the establishment of this disease as a specific entity but also to the thorough working out of its etiology, and the names of Surgeon-Major Veale, of Marston, D Bruce, Louis Hughes, Horrocks and Birt must for ever be associated with the history of this disease in the garrisons of the Mediterranean Sea, and in the same way Sir A E Wright, Lieutenant-Colonel Birt, R A M C, Major G Lamb, IMS, Major E Roberts, Colonel C P Lukis, and Captain Forster, IMS, must be associated with the discovery of the disease in India.

As we have said, the existence of Malta Fever in the Punjab and possibly in other parts of India is now an admitted fact, and as Captain Forster, IMS, has shown that, as in the Mediterranean garrisons, so also in the Punjab, goat's milk is a vehicle for its dissemination, it behoves all medical men in India to study this disease and be on the lookout for it, for we can hardly believe that a disease of this kind is limited to the Punjab, but so far but little evidence has been produced as to its existence in other and similar parts of India.

We therefore turn to Colonel Bruce's paper for information on the etiology of this curious disease.

In the first place, the work of the recent Commission of Naval and Military Medical Officers clearly established that the micrococcus

was excited in the urine of sufferers, and that it was fairly resistant to external influences and can exist in a dry condition in dust or in clothing for a couple of months, though exposure to the sunlight kills it in a few hours.

The micrococcus has, however, not been found in dust, sewer, air, or the water of infected places.

Infection by contact must be acquitted as there is no instance of a single case so arising among nurses or other sick attendants. Experiments have failed to show that infected dust could spread the disease. It can certainly spread by means of the alimentary canal, "even a single drink of fluid containing a few micrococci almost certainly gives rise to the disease," but this does not mean that the disease is a water-borne one. It has been also shown by the Commission that the evidence for the conveyance of the disease by mosquitoes or other biting flies is very slight, if such can occur, it must only be extremely rarely.

There remains therefore infection through the alimentary canal by means of goat's milk. In Malta goat's milk is very commonly used, and flocks of them were to be seen wandering about the streets from morning to night.

The proof of the danger of goat's milk need not here be detailed, but it is interesting to note that the great falling-off of Malta Fever cases in Gibraltar has been shown to be associated with the gradual disappearance of Maltese goats from the Rock.

This goat's milk theory is shown to explain many of the curious features in the epidemiology of the disease.

We may now see what have been the effects of measures directed against goat's milk. These were in Malta first begun in June 1906, and after a battle with prejudice the Naval and Military Hospitals agreed to banish goat's milk from the dietary.

The result is striking. A remarkable diminution of incidence was at once seen, broadly speaking, the cases fell to one-tenth of what would have been their normal number. In the first quarter of 1906 the ratio of cases was 22.2 per mille of annual strength, in the second quarter it had risen to 42.5 per mille, then came the stoppage of the use of goat's milk, and in the third quarter the figure fell to 15.4, and by the end of the year to only 3.8 per mille.

In the same way the Royal Naval Hospital, Malta, has had equally good results. To this hospital had been traced a large proportion of all the naval cases. Goat's milk was forbidden, and not a single case of Malta fever has been admitted or traced to residence in this hospital since the use of this milk was stopped.

In many ways the history of the discovery, prevalence, and inquiry into this fever is as instructive as it is creditable.

The establishment of the disease as an entity, the discovery of its cause, the micrococcus, the

repeated and finally successful inquiries into its etiology are all remarkable. To the officers of the Army Medical Corps and then confidères in the Navy we must give the entire credit for this most successful piece of scientific hygiene.

It shows what can be done by perseverance and by the repeated appointment of special officers for repeated inquiry into the prevalence of a disease. We cannot expect any valuable progress to be made by the deputation of one officer for a short period to study a great subject. He may be lucky or he may not, but we firmly believe that if Government will keep on putting special officers on special duty not for one season or one year, but year after year, the results will be good and worthy of the cost and trouble. It is well nigh 30 years since Surgeon-Major Veale (in 1879) first established this fever as a clinical entity, and now in 1906-7 the problem has been solved, and we see no reason for doubting that this disease can be blotted out from the records of the hospitals of the Mediterranean garrisons.

As for India we still need much more knowledge as to the existence of the disease and as to the degree in which goat's milk is used. It is possible also that the habit of boiling the milk in India may have a good effect. As for the use of the milk we think it common. We have often seen huge flocks of goats in many parts of the Sonthal Pegunnahs and in Chota Nagpur, but we have never yet heard of a case of Malta fever being recognized there. As there are no regiments in those parts of India, we commend this point to the attention of the Medical Officers of Jails and would ask them to specially look out for cases of long-continued fever, accompanied by sweating and neuralgic and rheumatic pains. The blood of such cases should be sent to one of the laboratories for report.

CASTING UP ACCOUNTS IN CONNECTION WITH MALARIA

MAJOR RONALD ROSS sends us the following, which we publish in this place so as to give it the utmost publicity. Replies should be sent to Prof. R. Ross, The University, Liverpool.

"It will be my duty in the autumn of this year to present a report to the International Congress of Hygiene at Berlin on the progress of antimalaria measures in British possessions, and if possible in America. Ten years will then have elapsed from the date when the parasites of malaria were first discovered in gnats, and I should therefore like to give as complete and trustworthy an account as possible of all that has been done against the disease during that period. From official publications, articles in the medical press, and private letters, I gather that campaigns have been at least commenced in the following localities—

Freestown, Lagos, Gambia, Gold Coast, Hongkong, Federated Malay States, Andamans, Caudia, Khartum, Trincomalee, Port Said, Natal, Mian Mir, Peshawar, Rawalpindi, Sialkote, Ferozepore, Karachi, Mhow, Kampti, Deesr, Saugor, Jhansi, Poona, Meerut, Lucknow, Secunderabad, Mandalay, Mymyo, all in British

dominions, and in Italy, German Possessions, Greece, Havana, Panama, and United States. Unfortunately the available descriptions of the work done and the results obtained in most of these localities are so vague that they are of little value. Will you therefore allow me to appeal through your columns to all medical men and sanitary officers who have interested themselves in the campaign to send me the necessary details to the address given above? The statements should of course give the area and population of the district dealt with (including towns, villages, plantations, factories, mines, railways and ships), the exact nature of the protective measures, and, if possible, any facts bearing on their results. In using the information I will of course always take care to give the name of my informant, unless specially desired not to do so."

ANTIMOSQUITO WORK AT PORT SAID.

IN a recent issue of the *Journal of Tropical Medicine and Hygiene* an interesting account is given by Dr. E. H. Ross, Medical Officer of Health, of the results of the campaign against mosquitoes in Port Said. It appears that Port Said has been one of the most mosquito-infested places in the world, and consequently the people welcomed the coming of the antimosquito brigade. These mosquitoes chiefly flourished in the underground cellars which are often full of water which abound in the European quarter of undrained Port Said. It does not appear that malarial fevers were or are common, though undoubted cases have been found, but Malta fever is rife, and cases of elephantiasis are not infrequently admitted to the hospitals.

It was found that the chief breeding places of mosquitoes were the flooded cellars, and barrels, fountains, flower pots, watering cans and buckets, the chief places being the cesspools and cellars, in all, there were 577 cesspools, 283 flooded cellars and 421 "other infected water collections."

It was at first attempted to treat these flooded cellars with tar, but this was found useless as the area was too large and the passages intricate, so finally it was found best to fill up these cells with sand and, in a few cases, make them "pucca" with cement.

The effect was soon apparent, in many parts mosquito nets at night could be dispensed with and the weary inhabitant could even enjoy his afternoon siesta without disturbance from mosquitoes.

So far so good. It is intended now to extend the operations to the Native quarter of Port Said. Among the lessons learned in this campaign against mosquitoes is that the anopheline mosquitoes breed in cellars and other collections of water under houses. Another interesting fact is that (in Port Said) mosquitoes only breed in dirty water and avoid the clean water in cisterns. This is somewhat strange.

It was also found that the best larvicide was "equal parts of crude and refined petroleum" with 5 per cent resin added to make a thick and resisting film.

The cost of the campaign has been, for the 8 months, £448, or say 6,700 rupees. This for the European quarter of Port Said, that is about £700 or 10,500 rupees per annum for a population of 15,000 persons.

This is an useful report, and will be read with interest by all who are doing or contemplating such work in India. It seems to us that if the mosquitoes can be permanently kept under control at a cost of say about ten annas per annum per head of the population, it is worth the money, but it shows also that no serious attempt can be made to exterminate mosquitoes at an outlay of a few hundred rupees. It seems, too, as if the difficulties in Port Said were less than are usually found in an Indian city. The cesspools and cellars were things that could not be overlooked and could be improved without difficulty.

We look forward with interest to the report of the operations in the Native quarter of Port Said. Meantime it must be admitted that Dr. Ross' report is distinctly encouraging.

THE BRITISH MEDICAL ASSOCIATION MEETING

THE next meeting of the British Medical Association will be held at Exeter in the end of July. The section devoted to Tropical Diseases promises to be very interesting. The President of the section will be Mr. James Cantlie, and Sir R. Havelock Charles, K.C.V.O., F.R.C.S., I.M.S., will be one of the Vice-Presidents.

The subjects selected for discussion are as follows—

Wednesday, 31st July—"Hæmoflagellates and Allied Organisms." The Discussion will be opened by Professor E. A. Minchin, Professor of Proto-Zoology, University of London.

Thursday, 1st August—"Diabetes in the Tropics." The Discussion will be opened by Sir Richard Havelock Charles, K.C.V.O., Lieutenant-Colonel, I.M.S.

Friday, 2nd August—The best methods of carrying out Antimalarial Sanitation, with special reference to such plans as may be most suitable for population in the more primitive stages of civilization. The Discussion will be opened by Professor Simpson, King's College, London.

Members of the Association who wish to contribute papers should send them in at once to the Honorary Secretary, Lieut.-Colonel G. M. Giles, F.R.C.S., I.M.S. (retired), 3, Elliot Place, The Hoe, Plymouth.

The subjects are well selected, and we hope that many of our readers will be able to contribute to the success of the meeting. Papers sent from India will be read by one of the Secretaries in the absence of the author.

TURNIP TOPS FOR CHRONIC DYSENTERY, &c

THE latest treatment we have heard of for chronic dysentery and chronic diarrhoea is that reported under the above heading (*Journal, Am. Med. Assoc.*, March 9th), by Drs. C.

Wilson and H. E. Piessly, of Alabama. In this article they advocate a diet of "greens," that is, a diet consisting of the green sprouting tops of turnips, mustard, spinach, and a plant known in the States as *phytolacca* or "poke." The authors report five cases, all of which had "symptoms closely resembling tropical sprue, the tongues were red and bare of epithelium, there was great weakness and pallor, with pale semi-solid frothy stools, and all did badly on milk."

It appears that "turnip greens" is a common article of diet in the Southern States. The tops or young green leaves must be well boiled, and apparently served up as spinach is at European dinner tables.

We call such greens *sage* in India, and it might be worth while to try a restricted diet of this kind in those troublesome cases of sprue, and chronic bowel complaints. While on this subject, we may also refer to another remedy called *Fomitin*, which has been much recommended by German writers as a remedy in the same sort of complaints. This drug, *fomitin*, is prepared from a well-known agaric (*fungus ignarius et cinnamominus*), and has been used as a styptic in folk-lore medicine from times immemorial. It has recently been much praised for its remedial properties in menorrhagia and similar pelvic troubles. It is said to be best prescribed after a light meal, one tablespoonful four or six times a day. It appears to act chiefly on the circulation and to increase the influx of blood towards the portal vein, and so bring about a better circulation of blood in the walls of the intestinal canal.

THE ALL INDIA HOSPITAL ASSISTANTS' JOURNAL

WE have received a copy of the first issue of this new periodical, which is edited by Mr. P. S. Ranchandrier and Mr. Anant Santiam Malve.

It appears to be the official organ of a newly constituted society called the "All India Hospital Assistants' Association," which we read has been founded "for scientific advancement, moral, material and social elevation, and for bringing into closer compact the ties of the widely spread class of medical votaries, at whose hands, in the words of H. E. Lord Lamington, though underpaid, much is expected."

We have on several previous occasions expressed our sincere sympathy with the very useful class of Medical Officers known in India by the inadequate name of Hospital Assistant, and we are aware that their grievances are being listened to, and we hope that the Government of India will be able to substantially improve the condition of this class of practitioners.

The present issue of this new Journal gives a full account of an inaugural meeting held on 12th January 1907, at the Bombay Bacteriological Laboratory under the Chairmanship of Surgeon-General J. P. Greany, the head of the Medical Department of the Bombay Presidency.

Surgeon-General Greany expressed himself in full sympathy with the expressed objects of the new Association, and Colonel Benson, I M S, the P M O, also expressed his sympathy. As Surgeon-General Greany reminded the meeting, the disabilities of Hospital Assistants as regards pay and position are at present under the consideration of the Government of India, and we can only echo his advice that Hospital Assistants should patiently await the orders of the Government.

The Association has started itself on what seems to be sound business lines, and we hope that while devoting attention to the admitted disabilities of the department the Association will not neglect the very important duty of educating its members and doing all in its power to raise their professional knowledge, as after all it is by their ability and usefulness as practical physicians and surgeons that they must expect to be judged.

THE ETIOLOGY OF DENGUE

"FROM the work which has already been accomplished, and that which we have in view, we hope to be able to demonstrate the following concerning the etiology of dengue fever —

1 That the cause of dengue is present in the blood of the infected individual, as the intravenous inoculation of healthy men with blood from a patient suffering from dengue is followed by a typical attack of the disease.

2 That the organism causing the disease is probably ultramicroscopic in size, as the inoculation of infected blood into healthy men after it has been passed through a filter which retains the smallest known organism, produces a typical attack of dengue.

3. That the incubation period is four days, whether filtered or unfiltered blood be used in inoculation.

4 That the disease is not contagious.

5 That dengue is transmitted by at least one species of mosquito (*Culex fatigans*), as proven by experiment" (*Journal Am Med Assoc*, February 23rd, 1907).

The above is the summary given by Drs P M Ashburn and C F Craig (of the U S Army), in an article on recent work on tropical diseases in the Philippines. We shall look forward to the further publication of this work and with especial interest to the "proofs" of the statement that dengue is transmitted by *Culex fatigans*, a matter which we have never seen any real attempt to prove.

In a review of a year's surgical work in the Miraj Mission Hospital, Dr W J Wanless shows the increase of work done in this hospital. In 1892 there were only 90 operations, in 1906 there were performed no less than 1,924. For anaesthesia Dr Wanless usually employs chloroform, except in abdominal operations. Chloroform was administered by the open drop method, the

Junker's inhaler was given up, "because of its cumbersome nature in tying up both hands of the anaesthetist, and thus preventing prompt dealing with complications."

Ether is used in 4 lb bottles, Meick's, and is administered "on a simple wire mask covered with changeable Canton flannel having a gauze partition on which the ether is dropped through a small aperture in the top of the pulse-string flannel cover." This inhaler is Ferguson's and obtainable from Squibb of Brooklyn, N Y. It is cheap and effective. The surgical record of this hospital, as our pages have testified, is a brilliant one. There were 78 abdominal operations (exclusive of hernia), 17 gastro-enterostomies, 14 operations for appendicitis, in 10 the appendix was removed (nine of these cases were in the persons of missionaries). Other operations were for intestinal obstruction, for neoplasms of intestine. There were three colostomies, two gall-bladder cases, one operation for hydatid cyst of spleen, and 56 operations on bones, and here Dr Wanless remarks that, contrary to a general opinion, he finds tubercular disease of bone to be common, and quite 40 per cent of bone diseases are, in his experience, tubercular. The report is a fine record of surgery.

We have received the Report for 1907 of the Kashmir Mission Hospital, and are glad to see a great increase in the attendance in this well-known hospital. It is gratifying to the medical officers to see the increase in medical cases, for as is well known the victories of medicine are "less renowned" than those of surgery. The list of surgical operations is also a record of increased usefulness, chloroform was administered 894 times and use was made of eucaine in 404 cases. Entropion and trichiasis account for nearly half the eye operations, total 1,335, there were 127 cataracts, and the Drs Neve remark "Intracapsular extraction is, with us, still *sub-judice*, we are accumulating evidence." There were 25 amputations, 285 tumours removed, including 63 "Kangri burn" cases, there were 14 laparotomies with no death, and 6 cases of Freyer's prostatectomy. Donations and subscriptions to this useful institution can be sent in India to the medical staff or to the Honorary Treasurer, Srinagar.

AN excellent report on work in Madras city in connection with the extermination of rats by Captain W A Justice, I M S, appeared in the Sanitary Commissioner's (Madras) proceedings for 3rd and 4th quarters. Such a practical and useful note should have been published earlier, and we would welcome such in our columns.

WE direct the attention of I M S Officers to the account given below by Lieut-Colonel Crawford of the pensions and funds belonging to the

service From experience we know that there are many officers imperfectly acquainted with the rules and regulations for such pensions

Reviews

Allbutt's System of Medicine, Vol II, Part II
Tropical Diseases and Animal Parasites, 1907
London Macmillan & Co 25s net

(First Notice)

SEVERAL years ago when the first edition of this great System of Medicine was coming out, we made the suggestion to Prof Allbutt that he should combine all the articles on tropical diseases into one volume. This suggestion was not acted upon at the time, owing to the appearance of Sir P Manson's admirable little volume on the same subject having put any similar book out of the field.

We are glad, however, to find that the suggestion then made has borne fruit, and the result is the handsome volume of 1,055 pages which forms the second part of the second volume of the new edition of this famous System, which is now appearing under the joint editorship of Prof Clifford Allbutt and Dr H D Rolleston.

We have read this volume with great interest and pleasure, and have no hesitation in pronouncing it the most complete up-to-date and authoritative work on the diseases of the tropics. This new volume is not merely a collection into one book of the scattered articles from the old edition. The tropical articles have been revised or in most cases re-written, and hence furnish statements of our knowledge of the subjects as complete as is possible in tropical medicine which as the preface says—"is in its youth and advances incident to vigorous growth are so continuous and imminent, before an article is printed, its conclusions may require modification." This volume is ushered in by a short introduction by Sir P Manson, F.R.S., and this is followed by three zoological articles, the first on protozoa by Prof Minchin, an admirable monograph of 122 pages, then comes a very complete article on mosquitoes by F V Theobald, the well-known Zoologist to the S-E Agricultural College, which runs to 46 pages. Mr E E Austen, of the British Museum, contributes a very valuable article of 17 pages on blood-sucking flies and others known or likely to be concerned in the spread of disease.

It is not necessary to point out how essential a knowledge of these subjects has become to students of tropical medicine. We can recommend these chapters to all who wish clear and modern views on the subjects treated. We should not, however, omit to mention Mr Pocock's article on ticks, as the family of Argasidae contain many species known to be harmful to man.

Turning next to tropical diseases, we find a short article by Dr J W W Stephens on trypanosomiasis, that is trypanosome fever in man, as described by Dutton. To Dr G C Low is entrusted the article on sleeping sickness which is admirably treated in all its aspects.

The subject of Kala Azar is ably handled by Lieutenant-Colonel Leishman, R.A.M.C., and full credit is given to the work of Donovan, Rogers and Patton of the Indian Medical Service, who have worked out the life history of the protozoan parasite, commonly known as "the Leishman-Donovan body," the biological position of which has not yet been definitely determined. We are glad to see that in the article on protozoa Prof. Minchin uses the term "Leishman-Donovan body," which we, on historical grounds, have always preferred. We are not prepared, however, to admit that what the late Dr Crombie, F.R.S., called "non-malarial remittent fever" is *kala azar*, nor do we believe in the escape of these bodies through cutaneous ulcers, for we think far too much has been made of a supposed identity between these bodies in the blood and other similar bodies in cutaneous sores or ulcers. The big subject of malaria has been written anew by Prof W S Thayer of the Johns Hopkins University, and is very complete, and Ronald Ross has a brief article on the "public prophylaxis of malaria," which is reasonable and practical. He quotes the usual "most decisive cases," at Ismailia and at Klang. At Klang and Port Swettenham (pop 4,000) the anti-malarial measures cost £10,000 for permanent works, and about £400 for annual upkeep.

We deal extensively with Dr. Stephens' chapter on blackwater fever in another place.

We shall return to a further review of this volume, and, meantime, strongly recommend it.

Modern Surgical Technique in its relation to Operations and Wound Treatment—

By C YELVERTON PEARSON, M.D., M.Ch., F.R.C.S.,
Professor of Surgery, Queen's College, Cork.
Pp 371, with 2 coloured and other Plates, and 111 illustrations in the text. Price 10s 6d.
Published by John Bale, Sons & Danielsson, Ltd., London.

THIS treatise, as the author states in his preface, is the outcome of a series of lectures to his surgical classes, and though primarily intended for students and house surgeons, certainly fulfils the hope that it may prove useful to operating surgeons and general practitioners. Surgical asepsis has passed the experimental or tentative stage, and this treatise in common with other books which have recently appeared, is an expression of the need for greater systematization of the details of aseptic practice, and the elimination of methods which have been shown by the lapse of time to be either imperfect or unnecessary, an object which we may say at once it admirably achieves.

Part I treats of preliminary considerations, surgical bacteriology, infection, disinfection and

antiseptics. These important introductory subjects are dealt with concisely and yet comprehensively, and the author is particular in his definitions. His attitude on the vexed question of nomenclature is one we thoroughly endorse, it cannot be better expressed than in his own words "The antagonism that has arisen between the relative meaning of the terms 'aseptic' and 'antiseptic', though useful in many ways, is one which I cannot help regarding as unfortunate. A true student of 'aseptic surgery', in my opinion, is one who endeavours to secure *asepsis*, either in an *infected* or *non-infected* wound by every means in his power. * * * While strongly advocating the avoidance of antiseptics when possible in the management of wound treatment, I do not hesitate to employ them in suitable instances."

Part II is devoted to prophylactic disinfection of the hands, skin, instruments, sponges, ligatures and dressings, etc.

Part III to wound technique, including chapters on such important contributory factors to success, as the prevention and treatment of hæmorrhage, needles, suturing, and drainage.

Part IV to operative technique with chapters on preparatory and post-operative precautions, concluding with two practical and suggestive chapters on operations in private houses, and aseptics in general practice, respectively.

Having thus indicated the scope and general arrangement of the book which lends itself to ready reference, as it is also furnished with a good index, we may note some of the details on which the author lays emphasis. Though in favour of merely sterile dressings and physical asepsis when practicable, the advantages and arguments for which he lays down very clearly, he fully and lucidly enunciates the value and the limitations of various chemical antiseptics, about which hazy and often erroneous views are still held. Sublimate lotion he has discarded for years in favour of biniodide for incontrovertible reasons, the only drawback being its slightly enhanced cost. In his directions for preparing standard solutions of it from "soloids" he has, however, fallen into the not uncommon error of confusing the percentage strength of the double salt, with that of its active constituent, *viz.*, mercuric iodide.

In his experience the local application of pure liquefied carbolic to septic surfaces and cavities, is attended with practically no risk of toxic effects, as the atria of absorption are sealed by its escharotic action, a danger from which more dilute solutions are by no means free. A plea for the more extended use of moist compresses of aluminium acetate in the treatment of septic wounds, is entered, the solution is official in the German Pharmacopœia. The efficiency of Tr. Benzoin Co, Benzoate of Soda, and the preparations of Iodine for their special purposes is extolled, in comparison with other newer and more fashionable remedies at the present time,

while the probable utility of lysoform, a saponaceous compound of formaldehyde free from its irritating properties is expressed.

For the disinfection of the hands and skin the author is clearly satisfied with the superiority of alcohol, followed by a 70 per cent alcoholic 1—500 biniodide solution, over all other methods. It is only right to point out that many careful experimenters have recorded the belief that the success of such tests is vitiated by the presence of minute traces of the antiseptic. The use of a moist antiseptic dressing on the skin afterwards is deprecated, as it is apt to irritate without aiding sterilization, and dry sterile gauze is advocated. For the preparation of catgut he favours the formaldehyde (Dudley's) and the iodine (Claudius') methods, of the latter three satisfactory alternative solutions are detailed. Experiments by Klemm are quoted pointing to "aseptic suppuration" from the use of merely sterile gut, and on these grounds the use of an antiseptic is preferable. The process is simpler too and requires no special apparatus. Lister's carbolic oil is rightly condemned, a fact which manufacturers might note with advantage, but in this respect he hardly does justice to the memory of Lister's work, as he was himself early dissatisfied with the method, and made many laborious experiments before finally elaborating the process of preparing sulphochromic gut. In one other instance the author also unwittingly leaves a false impression, when he states that Lord Lister "introduced" sal-alembroth gauze which is properly condemned. He certainly experimented with it, but never formally introduced it to the profession, as he was not satisfied with its superiority, and his own statement to this effect is extant in one of his last delivered lectures.

The latest opinions on the value and uses of iodoform are given at length. The author's conclusions are that it should not be used on the skin (for which he prefers one of its substitutes) or in ordinary wounds, but he considers its value in abscess and other cavities, and in tuberculous affections when cut off from the presence of free oxygen, to be beyond dispute. Iodoform gauze he prepares by rubbing it in with a sterile pad, steeping the fabric in an emulsion of iodoform in neutral hard soapsuds is simpler and ensures greater uniformity of distribution.

While the case for merely sterile dressings is urged with cogency and force, the advantages of antiseptic dressings under certain circumstances are enumerated as follows: "(1) In using some of them such as iodoform gauze, in certain special situations, (2) in ordering them for patients who have neither the skill nor knowledge to handle aseptic dressings correctly, and (3) for the use of the general practitioner who may not find it convenient to carry about with him a supply of sterile dressings. At least one of these reasons will find a pathetically sympathetic

echo in the hearts of many practitioners in India at the present time, though with the advance of teaching it is to be hoped that the necessity may gradually disappear. A description and illustration of a small and portable sterilizer invented by Stack and made by Allen and Haubury is given. From experience we can vouch for its utility.

We have noted at some length a few of the points which illustrate the thoroughly practical character of this excellent book, and we would refer briefly to two more. In the conclusions as to use and limitations of rubber gloves, the practical surgeon will find little to differ from. Their unquestionable disadvantages for the operator may be overcome in individual instances, but there can be no question of their advantages for assistants, for use in septic cases, and when the operator has a septic sore on his hands. Murphy's substitute of a temporary rubber coating is described at length.

Lastly, the author is ever insistent on the importance of prevention rather than cure, and clearly and categorically states that soiled dressings and septic discharges should never be touched with the bare hands, unless it is absolutely unavoidable. If this golden rule were more often borne in mind, we should hear less about the necessity for repeated and really impracticable hand re-sterilization.

The author views his subject from a singularly broad and unbiassed standpoint, and even when we may be inclined to differ from some of his conclusions, we cannot help being struck by the fairness of his arguments and the absence of all special pleading. We heartily recommend it to the profession in India as a most valuable exposition of modern surgical methods. The publishers are to be congratulated on the clearness of the type and general high standard of preparation, which is in keeping with the importance of the subject-matter.

Green's Encyclopedia and Dictionary of Medicine and Surgery.—Vol III Earthburial and Gum Indicum. Edinburgh and London. Wm Green & Sons.

THIS, the third volume of this handsome Encyclopedia of Medicine and Surgery, nearly completes one-third of the whole work which, therefore, we may expect to run to 10 volumes. We have already written favourably of the two previous volumes, and there is no doubt that articles are to be found in these volumes which it would be difficult to find elsewhere, take, for example, the subject of cemeteries, this is fully discussed under various headings, and we even find a note on garden cities, on fingers, on first aid, and on Eugenics.

Of the chief articles in this book we find Dr Jellett treats of eclampsia and Sir Halliday Croon, of ectopic gestation, the general editor, Dr J W Ballantyne, handles embryology, a subject he has made peculiarly his own, Hahn

of Munich writes of Enzymes, and Adams Frost, of the eye, Mr Dowden writes of first aid, and Dr Hope, of food, glycosuria is treated of by Dr Williamson, a recognized authority on diabetes, Dawson Williams treats of glandular fever, and Priestly Smith, of glaucoma.

The advantages of having such a complete dictionary and cyclopedia of all medical and surgical subjects are obvious, and the reader will find the subjects ably and briefly treated. For the reader in India, this land of frequent transfers, the only drawback is the size of the book, and to carry about ten such volumes would add seriously to the weight of the library of the civil surgeon or regimental medical officer.

Antiseptic Methods.—By HAROLD UPCOTT, F.R.C.S. Pp viii + 51 & 10 illustrations. 2s 6d net. Baillière, Tindall & Cox, London, 1907.

THE book is intended for the use of nurses and dressers. "Aseptic Methods" would have been a better title. It is a painstaking attempt at presenting practical instruction, but it suffers somewhat from overcompression and the enumeration of minute details of no intrinsic importance. The author would probably have attained his end better by devoting more space to the explanation of broad principles, and leaving the practical application of them more to common-sense. Some statements are misleading, but it contains several useful hints.

Correspondence.

THE USE OF SMALL INCINERATORS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I have read Surgeon General Hamilton's letter in your issue for April, on small incinerators with great interest. I can cordially corroborate the excellent results derived from kerosene oil mixed with earth as a flooring for latrines and urinals reported by him. When in Poona the Municipality oiled a road passing my bungalow with crude kerosene, and I was struck with the diminution of flies in my bungalow after this had been done. I have been advocating the use of kerosene ever since on the floors of urinals and latrines, and here in Aden it is gradually being introduced with the most satisfactory results. I have also found that applying the oil to the receptacles in urinals and latrines is a most excellent substitute for tar. Tar after one or two applications leaves the surface of the pans full of inequalities. The fluids remain in these, with the result that the stench is most offensive. The oil on the other hand leaves a perfectly smooth surface off which the liquids flow, leaving no residue. Here in Aden since the arrival of the 2nd Suffolks we have been using saw dust in the urine pans. The saw dust is placed in a basket on the mouth of the pans. The men micturate into it with the result that a large quantity of the urine evaporates while the residue percolates through into the pan and is removed in the usual manner. There is, using this material, a total absence of the usual urinary odour and it certainly diminishes the amount of fluid to be removed. If sufficient saw dust was used, the liquid residue would be nil. As an experiment I filled an ordinary chamber with saw dust, used it in my own bath room for a week without the slightest inconvenience arising. I wrote to Major G Lamb, I.M.S., at Kasauli, asking him if he thought the saw dust mixed with a 10 per cent solution of carbolic acid would have any effect on the passage of living germs through the saw dust thus treated. I should mention that the Suffolks mix the saw dust with a 10 per cent solution of carbolic acid. He wrote, saying that he thought such was the deodorising and disinfecting power of the saw dust, that the carbolic acid was unnecessary. We tried the saw dust without the acid solution, but the Suffolk Regiment

reported that when it was omitted the flies were more numerous. Major Lamb has kindly promised to conduct a few experiments with the saw dust when he has time and send me the result. Leaving out its probable disinfecting power and a means of destroying the enteric bacilli, which are so numerous in the urine of convalescent enterics, there can be no doubt about its deodorising qualities. It is, I consider, a most excellent addition to every animal, and I am sure would help Surgeon General Hamilton's plan of incinerating the night soil in lines and cantonments.

My attempts at incinerating here have not yet borne any fruits. I endeavoured to get Colonel Glen Allen's disinfectors built, but the cost in Aden was prohibitive. Instead of Rs 16 the estimate worked out at Rs 80 minus the thermometer. I will certainly try and introduce small incinerators as described by Surgeon General Hamilton. In a "one road" place like Aden the Crowley carts are an intolerable nuisance, and when there is no breeze their track is so impregnated with their sickening stench that to follow them is, even at a distance and after a considerable lapse of time, an impossibility. Anything that would rid the station of this unbearable nuisance would be an inestimable boon. As I have said I will endeavour to accomplish this, which a diminished quantity of urine effected by the universal use of saw dust might facilitate.

A drainage scheme for Aden was handicapped by the difficulty of our having to make the harbour the outlet for the drains. As we condense the harbour water for our drinking supply, the idea was not pleasant. The use of septic tanks, although the effluent did not require a very high standard of purity, was thought by many impossible owing to the necessity of using very brackish or sea water. The tanks under these circumstances might, it was considered, be almost as objectionable as the detestable Crowley carts themselves.

Yours, &c,

ADEN, }
23rd April, 1907, }

W HUME HENDERSON,
COLONEL, I M S

PRIVILEGE LEAVE AND STAFF PAY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Please publish the following and ask for expression of opinion—

Is it customary for an officer holding medical charge of a regiment, while on privilege leave, to pay all or any of his staff pay to the officer who acts for him?

It seems to me there are only two logical answers—

1. An officer should hand over the whole of his staff pay, on the ground that the man who does the work should get the pay.

2. An officer should give nothing because (a) such is the general custom in other branches of the service, (b) the whole idea of privilege leave is, that an officer is allowed to take leave on full pay and allowances, in order that he may not be prevented from taking his leave on grounds of expense, (c) if the staff pay is handed over to the acting officer, the reason of the of privilege leave ceases to exist.

Till the other day I would have thought that the second answer would be given by everybody to the question, but I have lately met one or two officers who hold that at any rate some payment should be made to the officer doing the work. Out of pocket expenses, such as tonga hire, etc., of course, do not come into the question, for that would be a matter of private arrangement in special cases.

It is for this reason that I write you this letter, for I consider that it is a matter on which there should be a thorough understanding throughout the service. It is, for obvious reasons, highly undesirable that one opinion or practice should prevail in one station, and a contrary one in another.

Yours, &c,

25th April, 1907

DIDDED

[This is a matter of importance, and we agree that it is desirable to have one rule on the matter. Opinions are invited.—Ed, I M G.]

KALA AZAR IN THE UNITED PROVINCES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The distribution of this disease not being fully worked out, yet it may be of interest to record briefly a case, where infection must have occurred in the United Provinces.

I was asked by Assistant-Surgeon Mukerji to see a patient of his, a boy of about 16, who had great enlargement of the spleen and weakness. The history was, that he had always been in good health till he went to Benares at the end of July 1905. For 18 months previous to this he had lived in Lucknow. He went straight to Benares without stopping any

where on the way. In the middle of August he first got fever, he could not give exact dates, but stated that it was about fifteen days after his arrival when he became ill, and the boy's father confirmed this. The attack of fever lasted about a week, and then subsided. After an interval of about a month, the fever returned, again lasting for about a week and subsiding. These periodical attacks of fever have continued ever since, with progressive loss of flesh and strength. The enlargement of the spleen was first noticed in March 1906 and has been steadily increasing since. About September he became very ill, and was taken up to Nani Tal. There he was treated by hypodermic injections of quinine, he had taken some quinine by the mouth in August 1906, but not before that, neither method controlled the fever.

I first saw him in January 1907, he complained of constipation, slight cough and a feeling of great weakness. He looked extremely ill and wasted, the abdomen was prominent owing to the great enlargement of the spleen, the outlines of which were visible through the thin walls. The liver also was somewhat enlarged, and the edge could be felt below the ribs. The examination of the heart and lungs showed nothing noteworthy. The urine was free from albumen, but gave the spectrum of urobilin. Blood from the finger showed well formed red cells, and no obvious increase of white cells, no malarial parasites, and no nucleated red cells were found. The proportions of the various forms of white cells were—

Polynucleus	25.5 %
Lymphocytes	29.75 "
Large mononucleus	37 "
Eosinophiles	0.25 "
Mast cells	0.25 "
Damaged cells, unrecognizable	7.25 "

100

The liver was punctured with a fine hypodermic needle with strict antiseptic precautions, and a smear of blood from the liver was stained with Leishman's stain. After a long search two Leishman Donovan bodies were found embedded in the protoplasm of a large mononuclear cell. They were perfectly typical, and unmistakable. This puncture was made during one of the intervals of freedom from fever, which, no doubt, accounted for the difficulty in finding the parasite. On the next occurrence of fever the liver was punctured again, and on this occasion the parasite was found in considerable numbers.

I did not see the patient again, but I am informed that his disease is steadily progressing, no benefit having followed from large doses of quinine and bone marrow. He was in too far advanced a stage for much to be hoped from treatment.

ATLAPAD }
31st March, 1907 }

Yours, &c
K. CLOSE
MAJOR, I M S

THE HYPODERMIC USE OF QUININE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—I beg to send here with a prescription for the hypodermic use of quinine.

Take of the sulphate of quinine 30 grains and make it into a soft paste with a few drops of distilled water in a glass mortar, then add pure hydrochloric acid drop by drop continuously and also a few drops of distilled water, occasionally rubbing it up with the pestle at the same time till you get a clear solution. Eight or nine minims of the acid will fully dissolve the alkaloid, and the bulk of the solution is to be made up to two drachms with distilled water. Each 20 minims of this solution will contain 5 grains of quinine.

Yours, &c,

BALASUNDRAM SIBROY MUDELIAR,
1st Class Hospital Assistant, Bangalore

LATE TEETHING IN INDIA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The enclosed statistics will show that in India infants cut their teeth at a later age than that given in books. Out of 100 infants of varying ages, from 8 months to 2 years, 30, nearly one third, had cut no teeth and out of 14 infants, 8 months' old, more than half, 8, had not commenced teething. Out of 27 infants one year old, 7 had not cut any tooth, 7 had cut 4, 6 had cut 6 teeth, and only one had 9. Though the statistics speak comparatively for a small number only, they support the every day experience. The infants referred to are brought to the dispensary mostly for minor ailments, as sore eyes, skin diseases, etc.

Statistics showing the number of teeth cut by 100 infants of varying ages, these infants attended the Malegaon Dispensary for various diseases

Number of teeth cut	The number of infants with their age in months										Total
	8	9	10	11	12	14	15	18	21	24	
0	8	7	4	1	7		1	1		1	30
1	1							1			9
2	3	2	2		1		1				9
3	2	1	1		4			1			9
4		1	3	1	7		2	2			16
5								1			1
6		2			6	1	3			1	13
7					1			2			3
8								1	1		2
9					1						1
10								4			4
11								1			1
12						1	2	2		2	7
14								1		1	2
Total	14	13	10	2	27	2	9	17	1	5	100

Years, &c.,

V D MERCHANT,

Assistant Surgeon

THE INDIAN MEDICAL SERVICE

By D G CRAWFORD M.P.,

First Colonel, I.M.S.,

Chief Surgeon, Hough

(Continued from page 198)

8 Pensions

History—Pension, like furlough, is more or less a modern institution. The early servants of the East India Company, neither expected, as a right, nor got any pensions at all, though a compassionate pension might occasionally be granted as a favour. For instance, the Governor and Council at Bombay, in 1775 requested the Court of Directors to grant a pension of £100 a year to Mr John Potter, Surgeon at Tellicherry (Tellicherry Factory, Vol XXVII, pp 95–97, in Madras Press Lists, entry 1271, 3rd October 1775). Mr Potter was first appointed on 27th December 1767, resigned in April 1775, and died at Tellicherry on 10th December 1776. In the previous year an allowance had been granted to the widow of Assistant Surgeon Bartholomew Suffren (Madras Military Cons., Vol XLIX, pp 503–507).

Pensions were given to military officers previous to 1782. A letter from the Court of Directors to the President and Council of Fort St George, dated 12th July 1782, lays down that only Surgeons in the Army are eligible for pensions, not those attached to factories. In Bengal also it was ordered that only military surgeons were entitled to furlough and pension (letter from Secretary to Government to Medical Board, dated 8th July 1796). This rule, however, was practically inoperative, as the whole service were considered military. Minutes of Council in the Military Department, Bengal, of 12th September 1796, cancel the proposed separation of the medical service into military and civil branches, saying "As all medical officers in civil employ will remain liable for military duty, the medical officers in civil employ to be considered equally entitled to benefits of furlough and pension, excepting these gentlemen who have resigned all claims to promotion."

The following pension regulations were introduced by a General Order of 20th February 1813. Retirement on pension was permitted after 25 years' service in India, inclusive of three years' furlough, i.e., after 22 years' actual service in the country. The pension

given to an officer retiring at 25 years was the full pay of an infantry officer of the rank to which he had attained.

The following scales of pension were laid down for medical officers, who had served in India for not less than 20 years, including three years' furlough.

A member of the Medical Board, who had served in that capacity for not less than two years, £500 per annum.

A Surgeon of a General Hospital, who had held that position for not less than two years, £300 per annum.

Other Surgeons and Assistant Surgeons, the pay of their rank.

Subalterns and Assistant Surgeons, who had been in India not less than six years, and were medically unfit for further service, the half pay of Ensign (£36 10 0 per annum).

In 1836 appear certain additions, mostly general, one referring to medical officers only. By the latter, Superintending Surgeons, who had served in that rank not less than two years, and whose total service in India, including one furlough of three years, was over 20 years, were allowed a pension of £300 per annum after five years as Superintending Surgeons, £365 per annum. If invalidated on account of ill-health, they got £300 at any time after attaining the rank, £365 after three years' service in the rank.

Officers invalidated on account of wounds received in action, or ill-health contracted on duty, after three years' service, might retire on the half-pay of their rank.

By General Order of 15th July 1842, the following scale of pensions came into operation. In each case the service required included three years' furlough—

Surgeons after 20 years' service £191 per annum

"	"	23	"	"	£300	"
"	"	32	"	"	£365	"
"	"	35	"	"	£500	"
"	"	38	"	"	£700	"

Officers promoted to Superintending Surgeon or Member of the Medical Board (who were considered as Surgeons) during the next ten years, were given the option of accepting the new, or continuing upon the old scale.

By General Order No 122 of 1844, another pension was made available, £250 after 20 years' service, while the pension of £191 was given after 17 years. And in 1857 the periods of service for the three higher pensions were reduced from 32, 35, and 38 years, to 29, 32, and 35 years, respectively. There was then no compulsory retirement at any age limit.

Pensions from Lord Clive's Fund might be given in addition to the pension given by the Company, to officers who were not possessed of property of more than a certain value, varying from £4,000 in the case of a Colonel to £750 in the case of an Ensign. The pensions allowable to medical officers from this fund were: to a Surgeon, £91 5, to an Assistant Surgeon, £45 12 6 per annum.

The "Military Fund," which gradually came to be called "Lord Clive's Fund," was abolished after the Crown assumed the Government of India. For the previous half century it had existed in name only, the pensions which were given, nominally from this Fund, being really paid out of the Indian revenues. For many years preceding this date, the annual payments made nominally from this Fund had each exceeded the whole capital of the fund.

Perhaps the greatest advantage of service in the I M S is the present rate of pension, which is probably higher than that of any other large graded service in the world, certainly higher than that of any other medical service. The present pension rules came into effect from 13th August 1903, under Notification No 1047, dated 23rd October 1903, by the Government of India, Military Department. The rates of pension are as follows, in pounds per annum. The rates in the

R A M C are also given for the sake of comparison, as also the rates in force in the I M S up to 1903

Rank and length of service	I M S (Former)	I M S (Present)	R A M C
After 17 years' service	292	300	
Do 20 ditto	365	400	365
Do 25 ditto	500	500	410
Do 30 ditto	700	700	455
Lieutenant Colonel on selected list, after 3 years' service as such, or 30 years' total service			547
Colonel after 3 years' service as such		825	638
Colonel after 5 years' service as such	950	950	
Surgeon General after 3 years' service as such		1,050	730

All the furlough, which an officer may have been able to get, now counts as service towards pension

One curious effect of the increased pension rates given in 1903, has been, that retirement at 25 years' service, formerly the time at which most men left, has now almost ceased in the I M S. The majority either leave at twenty years, or wait for the thirty year pension, with the chance of promotion

One grievance, in connection with pensions, existed up to 1903. That was, that an officer who entered the service over the age of 25, as many do, could not serve long enough to obtain the full pension of £700 after thirty years' service, as he was retired at the age of 55, unless he had obtained promotion to the administrative grade before that time, which was unlikely. Under the new rules of 1903, an officer on the "selected list" of Lieutenant Colonels, if physically fit, may be granted an extension to enable him to complete thirty years' service, but, during such extension, is not eligible either for promotion, or for the extra "compensation" pensions

These compensation pensions have been given since 1886, to compensate the service for the abolition of the higher pensions, given to administrative medical officers, which were lost when the Sanitary Commissioners no longer received administrative rank at 26 years' service. There are four such pensions, each of £100 a year, given annually, two in Bengal, one each in Madras and Bombay, but only officers who entered the service up to August 1889, are eligible for these pensions

An officer, obliged to retire on account of ill health, with less than seventeen years' service, may do so on the following rates of invalid pension: at 12 years, £192 per annum, at 13 years, £212, at 14 years, £232, at 15 years, £252, at 16 years, £272

It is true that the rates of pension in the I M S, as given above, do not appear large in comparison with the pension of £1,000 a year, given at 25 years' service, of which 21 years must have been spent on duty in India, to the Indian Civil Service. But there are two points in which the pension of the I M S is far superior to that of the Civil Service. *First*, the varying rates given to the I M S, for varying lengths of service, whereas the Indian Civilian *must* put in 25 years' service, with 21 years' residence. He cannot voluntarily retire from the service on pension at any earlier date, should he resign, even with over twenty years' service, he gets no pension at all. Should he be invalided, for ill health contracted in the service, when he has completed less than 25 years' total service, or less than 21 years' residence, even should he fall short of these periods by only a few months, he receives only an invalid pension, which up to within the last few years did not exceed £450 per annum, and, should he serve on to 35 years' service, he gets no higher pension. This invalid pension to the Civil Service has been recently considerably raised. *Second*, the officer of the I M S gets his whole pension from Government, while the Civilian has

to contribute largely towards his pension, out of his pay, throughout his service. He is supposed to contribute the value of £500 a year, one half of his pension of £1,000 a year, and for this purpose has to pay four per cent of his pay throughout the whole length of his service. Should he continue to serve on to 35 years, he continues to contribute this fixed proportion of his pay to the pension fund, and, of course, the higher the pay the higher the contribution. It may thus even happen that a Civilian, who puts in 35 years' service, and has been fortunate in his promotion, holding highly paid appointments during the last fifteen or twenty years, may have contributed to the pension funds more, sometimes much more, than the total value of his pension of £1,000 a year (i.e., more than the sum which would purchase an annuity of that amount at the age at which he retires), and may thus, practically, receive no pension at all from Government, and even be a loser and not a gainer by his connection with the pension funds

In the R A M C the most recent regulations allow, since 1902, an officer who has got the promise of a post as Resident Medical Officer to obtain leave without pay, up to one year, after passing through his course of instruction at the Army Medical School, to take up his resident appointment. Such leave, though without pay, counts as service for promotion and pension. The same privilege has, since 1903, been granted to officers entering the I M S. This enables a man, who has got a resident appointment, to enter the I M S before he takes it up, thus not losing seniority while holding the appointment, while at the same time the State gets the benefit of his increased experience when he joins

Service at Netley.—Officers of the I M S up to and including those who entered on 31st March 1890, used to rank from the date of joining the Army Medical School. Officers of the A M D used to rank from the date when they left Netley, four months later, a difference which was, not unnaturally, made a subject of constant complaint by the latter. The A M D did not succeed in improving their own position by their complaints, but succeeded in getting the I M S brought down to a level with themselves in this respect, from the latter half of 1890, the men who passed for the I M S in August 1890, who would otherwise have been commissioned from 1st October 1890, the date when they joined at Netley, being granted their commissions from 29th January 1891, the date when they left Netley. Both services have recently been allowed to count their service at the Army Medical School, the R A M C from 1902, the I M S from 1903. The officers who entered the I M S in the twelve years from 1891 to 1902 inclusive, do not, therefore, count four months' service, which both those above and those below them are allowed to count

Officers of the I M S, placed on temporary or permanent half pay, receive the British rates of half pay of their military rank, as follows—

	£	s	d	per annum
Lieutenant Colonel	200	15	0	
Major	173	7	6	"
Captain	127	15	0	"
Lieutenant	54	15	0	"

These rates of permanent half pay, however, can hardly apply to a Major or Lieutenant Colonel, who would necessarily be entitled to a higher rate of pension by length of service

In the case of an officer placed on half pay on account of ill health contracted in the performance of military duty, a period of one year or less on half pay reckons towards promotion and pension. An officer is transferred to the pension list, or to permanent half pay, according to his length of service, after six years on the temporary half pay list

Officers of the I M S are entitled to the same allowances on account of wounds and injuries received in action as are granted to combatant officers of the Indian Army of the same rank

9 *The Funds and Family Pensions*—The Military Orphan Fund was established in Bengal at a very early date. An order of the Military Council, dated 11th October 1785, lays down the following rates of subscription: Captains and Surgeons, six rupees; Subalterns and Assistant Surgeons, three rupees per month.

The Bengal Military Widows' Fund was established on 1st January 1806. Subscription to this Fund was made compulsory for medical officers in 1834. The subscriptions were at the following rates per month—

	As member	As unmarried subscriber
	Rs	Rs
Majors and Head (Superintending) Surgeons	25	8
Captains and Surgeons	16	5
Subalterns and Assistant Surgeons	9	3

Officers who joined the Fund as unmarried subscribers before 1st January 1809, became full members on marriage, without donation, after three years' subscription as unmarried subscribers. For those who joined after that date five years' unmarried subscription was required to escape payment of a donation on marriage. Otherwise the following donations were exacted on marriage, varying according to the length of time for which an officer had been an unmarried subscriber—

	3-5 years	2-3 years	Under 2 years
	Rs	Rs	Rs
Major and Head Surgeons	400	800	1,200
Captains and Surgeons	250	500	750
Subalterns and Assistant-Surgeons	150	300	450

No married officer could become a full member whose wife was not actually in Bengal at the time he joined. When he married, or when his wife arrived in India, if he did not join the Fund within three months, but wished to join later on, the donations, as well as the subscription rates for the months which had elapsed, were doubled. Applicants for membership had to submit a health certificate and also their marriage certificates. Officers were permitted to subscribe at the rates, and for the widow's pensions, of a rank higher than their own, on the payment of certain donations, by no means large in proportion to the ordinary fixed donations, *eg*, the highest, that payable by a subaltern who wished to subscribe for the pension of a Colonel's widow, was only Rs 800. Donations were exacted then, as now, on promotion to a higher rank. Members retiring or going on furlough could either continue their monthly subscriptions, or become permanent members, on payment of certain large donations. A widower was allowed to subscribe at the unmarried rates, rejoining as a full member if he married again. A member could withdraw at any time, before subscription was made compulsory, on forfeiture of all claims on the Fund, but was not entitled to a refund of any of his subscriptions. The property of the Fund was vested in Company's paper, in the names of the President and Managers of the Fund, who were elected by the members, from among members resident in Calcutta.

The pensions given by this Fund were as follows—

	In India per month	In England per annum
	Rs A P	£
Widows of Colonels	200 0 0	300
" Lieutenant-Colonels	166 10 8	250
" Majors	133 5 4	200
" Captains	100 0 0	150
" Subalterns	66 10 8	100

In 1834 we find medical officers ranked as follows for the purposes of this Fund: Lieutenant Colonels and members of the Medical Board, Majors and Superintending Surgeons, Captains and Surgeons, Lieutenants

and Assistant Surgeons. In 1836 medical officers were put on a somewhat higher footing, 112, Colonels and eighteen Surgeons of the First Class (including the members of the Medical Board and the Superintending Surgeons), Lieutenant Colonels and eighteen Surgeons, Second Class, Majors and eighteen Surgeons, Third Class, Captains and (the rest of the) Surgeons, Lieutenants and Assistant Surgeons.

The *Medical Retiring Funds* were started in order to give extra pensions, by voluntary subscription, in addition to those given by the Company. There were three such Funds, Bengal, Madras, and Bombay, entirely independent of each other.

The Bengal Fund was started in July 1836. Its regulations appear for the first time in the East India Register of 1848. Subscription was made compulsory in 1855. This fund gave six pensions, £300 a year each, annually, to the six senior officers who had not previously come in for them. If still serving when he became entitled to the pension, the officer receiving it had to retire. No officer was entitled to a pension from the Fund till he had paid into the Fund half the value of the pension. An officer retiring after 17 or more years' service, was allowed to retain his claim to a pension from the Fund, when his turn arrived. This Fund was taken over by Government with effect from 1st March 1868.

Under G O G No 532 of 4th June 1868, Government accepted the liabilities and assumed the assets of the following funds—

- (1) Military and Orphan Funds, Bombay
- (2) Ditto ditto, Madras
- (3) Military Fund, Bengal
- (4) Military Orphan Fund, Bengal
- (5) Medical Retiring Fund, Bengal

The Madras Retiring Fund was made over to Government from 1st September 1870 (Madras G O No 32 of 1st February 1870 and 815 of 19th August 1870), and the Bombay Retiring Fund about the same date.

The *Indian Military Service Family Pension Fund* was established from 1st January 1873, its rules being published in G O No 1315 of 28th September 1872, and G O G No 580 of 23rd May 1873. Officers serving in the Indian Army, prior to 1st January 1873, were given the option of joining the Fund or not, as they chose. It was laid down that any officer who did not join before 1st July 1873, would only be allowed to do so on the production of a medical certificate of good health, and any officer who did not join before the 1st July 1874, would only be allowed to do so later by a special order of the Governor General in Council. Every officer who joined the Indian Army subsequent to 1st January 1873 had to become a subscriber to the Fund, the subscriptions of unmarried officers, however, are small. An officer who enters the service married has to pay a donation to the Fund, and every officer pays a donation on marriage, the amount of the donation increasing with each step of rank, and also with the disparity in age between himself and his wife, the greater the difference the higher the donation. Every married officer has also to pay a donation with each successive step of rank.

The pension paid to widows from this Fund are as follows—

Lieutenant Colonel (over five years' service and subscribing for the higher rate)	£ 160 per annum
Lieutenant Colonel	130 "
Major	100 "
Captain	70 "
Lieutenant	40 "

The pensions paid from the Fund to children are the same for all ranks, and vary with age and sex, from £10 to £45 per annum. Grown up daughters receive

the highest rate, till their death or marriage. Sons' pensions stop at the age of 21.

In addition to the pensions from the Indian Service Family Pension Fund, widows and families of officers may be granted pensions under the provisions of such Royal Warrant regulating the grant of pensions to the widows and families of British officers as may be in force for the time being. Pensions under these warrants are not granted to widows and families in affluent circumstances. These pensions are not claimable as a right, but each case is judged on its merits. The amounts which at present can be granted under these warrants are as follows, in pounds per annum —

Rank	Widow	Each child
	£	£
Lieut Colonel	90	16
Major	70	14
Captain	50	12
Lieutenant	40	10

The widow of an officer dying of sickness in the field may receive pension at somewhat higher rates, of an officer killed in action or dying of wounds, at about double the above rates, under the Royal Warrant. This does not apply to the Fund pensions, which are not affected by the place or manner of death.

(To be continued)

Service Notes

COLONEL H. HAMILTON, M.D., C.B., F.R.S., Indian Medical Service, is appointed to be Surgeon General *vice* Surgeon General A. Scott Reid, Indian Medical Service, vacated Dated 24th March 1907.

Surgeon General Hamilton's tenure of appointment will reckon from the 20th March 1907.

Surgeon General Hamilton was born on 7th April 1851, entered the service 31st March 1876. He served for many years in Gorkha Regiments, and has seen much war service, commencing in the Afghan War of 1878-79-80, when he took part in the action of Churashah, the operations at and round Kabul, and the affair of Sheikhabad. He was with Roberts on the famous march from Kabul to Kandahar, at the end of this campaign he was mentioned in despatches, and got the Afghan medal with three clasps and the bronze star of the Kandahar march. In 1895 he took part in the relief of Chitral, getting the Chitral medal and clasp. In the disturbances of 1897-98 on the N.W. Frontier Lieutenant Colonel Hamilton took part in the operations on the Samana and in the Kurram Valley and afterwards accompanied the flying column under Col. Richardson. He was mentioned in despatches and obtained the frontier medal with three clasps, and was promoted to be Brigade Surgeon Lieutenant Colonel after the Unah Expedition. In 1900 he went with the Indian Expeditionary Force to China, for which he also had a medal. He became Colonel in October 1902 and has recently been P.M.O. of the Sind and Jullundur Brigades.

Surgeon General Hamilton has always been a keen sportsman and for many years past has been a valued contributor to the pages of the *Indian Medical Gazette*.

We regret to announce the death of Colonel John McConaghey, late of the Bengal Medical Service, which took place at Exmouth on 18th April 1907, less than two years after his retirement. Colonel McConaghey was born on 8th January 1849, was educated at the Queen's Colleges of Galway and Belfast, took the degrees of M.D., M.Ch. at Queen's University in 1871, and entered the service on 30th March 1872 at the age of 23. Most of his service was spent as a Civil Surgeon in the United Provinces of Agra and Oudh, where he will long be remembered as the popular Civil Surgeon of Lucknow. He officiated for a short time as Inspector General of Civil Hospitals and in the United Provinces for six months in Bengal and became Inspector General in the Punjab on 16th June 1902, retiring three years later, on 16th June 1905. The Army Lists assign him no war service.

Colonel McConaghey entered the service low down in one of the largest batches which were ever appointed on one date, 23rd out of 28 in Bengal. Only five of this batch rose to the administrative ranks, Surgeon General Reid (8th), and Colonel Joubert (3rd), Hill (6th), Bookey (18th) and

McConaghey (23rd), though Lieutenant Colonels Young (20th), and Duke (21st) also acted for some time. Those who stand low down in their respective years may see that it is not always the men who enter at the top who stand highest in the long run.

We quote the following account of an I.M.S. dinner, sent to us by a correspondent from the *Bombay Gazette* —

"A thoroughly enjoyable and highly successful function took place recently, when 52 officers of the Indian Medical Service met at dinner in Green's Restaurant, Apollo Bunder, under the presidency of Surgeon General J. P. Greany, M.D., Surgeon General with the Government of Bombay. This is only the second of such reunions, which it is hoped will now become annual events, for, that the members of the Service appreciate the opportunity of meeting together in social intercourse was amply demonstrated by the attendance on Saturday night of such a large number of officers, many of whom had come from distant parts of the Presidency. No better method of fostering that *esprit de corps*, so essential to the well being of a Service, exists than that afforded by such reunions, where men meet with friendliness and good fellowship to discuss and ventilate questions intimately affecting their interests, form new acquaintanceships and renew old friendships. Such social gatherings are especially needful in a Service such as the Indian Medical Service inasmuch as the majority of its members are scattered here and there over the whole Presidency in remote civil stations.

Colonel J. P. Greany was in charge of the dinner arrangements which were admirably carried out. The floral decorations were kindly arranged by Miss Dimmock and Miss King, and the horseshoe table looked charming with its masses of pink blossoms and green foliage. The Menu Cards surmounted by the crest of the Service were carried out in a chaste design of blue and white, and each card was embellished by a Shakespearian motto appropriate to the officer for whom it was intended.

On the conclusion of the dinner Surgeon General Greany rose to propose the health of the King Emperor, and when this had been duly honoured, he gave the toast of "The Indian Medical Service." Surgeon General Greany in an excellent and pithy speech said it gave him much pleasure to see present so many brother Officers, many of whom had come at great personal inconvenience from distant stations. He considered their presence indicative of their great interest in the Service and their keen desire for its welfare.

Colonel P. H. Benson, P.M.O., Poona, in proposing the health of their popular President, Surgeon General Greany, M.D., made a witty speech which was greeted with loud applause.

Several songs, which were much appreciated, were afterwards rendered in an excellent manner by Captain Brown, Major C. T. Hudson, Lieutenant J. Cunningham, and Captain L. P. Stephen, accompanied by Major W. E. Jennings on the pianoforte, and later on the members dispersed at an advanced hour highly pleased with a very enjoyable evening.

The following is a list of the officers present — Surgeon General Greany, Colonel Benson, Lieutenant Colonels Bull, MacCartie, Dimmock, Corkery, Dalal, Mistra, MacLuen, Lyons, Barry Cummin, Colhe, Brainerman, Quicke, Majors Meyer, Childe, Herbert, Jennings, Hojel, Thomson, Hudson, Street, Swinton, Bourke, Bennett, McDonald, Captains Hooten, King, Brunes, Lincoln, Majorbanks, McPherson, Cox, Anthony, Novis Hutchinson, Dickinson, Stephen, Houston, Keys, Gloster, McPherson, Mackie, Brown, Kiddle, Whitworth Jones, Lieutenants Bradfield, Cump, Cunningham, Thorburn, Smalley."

The following important ruling appeared in the *Gazette of India* dated Simla, 20th April 1907 (No. 25) —

"Alteration of the rule for the allotment of officers of the Indian Medical Service to areas for purposes of civil employment."

Under instructions from the Secretary of State for India, the Governor General in Council is pleased to notify that in future, commencing with those appointed at the entrance examination to be held in August 1907, officers admitted to the Indian Medical Service will not be permitted to exercise a choice of area for the purpose of civil employment as stated in paragraph 4 of the notification in the Department of Military Supply, No. 74, dated 13th July 1906 but will be posted, upon a consideration of all the circumstances, including as far as possible their own wishes, to one of the civil areas detailed therein, viz —

- 1 Madras — To include Madras and Burma
- 2 Bombay — To include Bombay and Aden
- 3 Upper Provinces — To include the United Provinces, the Punjab and the Central Provinces
- 4 Lower Provinces — To include Bengal and Eastern Bengal and Assam

Officers transferred to civil employment, though ordinarily employed within the area to which they may have been

assigned, will remain liable to employment elsewhere according to the requirements of the service."

APPOINTMENTS — MEDICAL OFFICERS The following revised distribution of paid appointments to the charge of Cantonment Hospitals and Staff Surgeoncies in this Command is promulgated for the information of all concerned, in supersession of Bombay Command Order No 667 of 12th August 1904 —

CANTONMENT HOSPITALS

R A M C Officers	I M S Officers
Ahmednagar	Hyderabad
Belgaum	Jhansi
Deolali	Jubbulpore
Kamptee	Karachi
Nasirabad	Kulkee
Pachmarhi	Mhow
Poonah	Neemuch
	Saugor

STAFF SURGEONCIES

R A M C Officers	I M S Officers
Aden (Steamer Point)	Aden (Canton)
Jhansi	Ahmednagar
Jubbulpore	Belgaum
Karachi	Bombay
Mhow	Nasirabad
Quetta	

II — Effect to be given to this order forthwith at stations at which the paid appointments are not so distributed

MAJOR P W O'GORMAN, I M S, Medical Storekeeper to Government, Lahore, has been granted one year's leave out of India from 3rd April 1907

LIEUTENANT COLONEL R H CASTOR, I M S, and Captain A M S Miller, I M S, shortly return from leave in England

CAPTAIN J MORRISON, I M S D, having retired, Captain M Windross is confirmed as Civil Surgeon, C P

CAPTAIN G MURPHY, I M S D, having retired, second grade M Assistant Surgeon A D C PERDRIAU is confirmed as a Civil Surgeon

CAPTAIN W J MONTGOMERY, I M S, having retired, first grade Military Assistant Surgeon J Robertson, I M S D, is confirmed as Civil Surgeon

MAJOR G Y C HUNTER, I M S, Officiating Superintendent, Central Jail, Jubbulpore, is appointed to be Superintendent, Central Jail, Jubbulpore, Provisional, with effect from the afternoon of the 28th January 1907, vice Captain F D Browne, I M S, whose lien on the appointment is suspended

WITH effect from the 19th March 1907, consequent on the retirement of Honorary Captain G T Carroll, I M S D, Civil Surgeon, Charan Singh, Officiating Civil Surgeon, Hamirpur, to be confirmed in that appointment Civil Assistant Surgeon Gobind Narayan Das, from the first to the senior grade, Temporary Assistant-Surgeon Lachhmi Narayan to be an Assistant-Surgeon, 3rd grade, *sub pro tem*

WITH effect from the 6th March 1907, Captain E J O'Meara, I M S, Officiating Civil Surgeon, to be Civil Surgeon, 2nd class, vice Major C Thomson, I M S, Civil Surgeon, whose services have been replaced at the disposal of the Government of India

WITH effect from the 26th March 1907, Captain W S Willmore, I M S, Officiating Civil Surgeon, to be Civil Surgeon, 2nd class, vice Lieutenant Colonel D W Scotland, I M S, Civil Surgeon, retired

MILITARY ASSISTANT SURGEON H V W COX, Superintendent of the Mayo Hospital Dispensary and Lecturer on Pharmacy, Medical College, Lahore, is appointed to officiate as Civil Surgeon of Shikhar, and assumed charge of his duties on the afternoon of the 28th of February 1907, relieving Lieutenant C A Owen, I M S D, proceeding on leave

SENIOR ASSISTANT SURGEON PANDIT ATAR CHAND in charge of the Rawari Dispensary, is appointed on the 20th March 1907, as Civil Surgeon on the Punjab Provincial Establishment, with effect from the 5th April 1907, vice Rai Sahib Bhagwan Das, who will retire from that date

CAPTAIN R W KNOX, I M S (Madras), an Agency Surgeon of the 2nd Class, is granted privilege leave for three

months, combined with furlough for nine months, and study leave for nine months, with effect from the 1st April 1907, under Articles 233 and 308 (b) of the Civil Service Regulations and the regulations prescribed under the letter from the Government of India in the Military Department, No 3470 D, dated the 10th August 1905

CAPTAIN S H LEE ABBOTT, I M S (Bombay), Medical Officer, 37th Dogra, is appointed to hold charge of the current duties of the office of Agency Surgeon in Bundel Khand, in addition to his own duties, with effect from the 1st April 1907, and until further orders

MAJOR G T BIRDWOOD, I M S, was granted seven months' combined leave from 11th April 1907

CAPTAIN CAMPBELL DYKES, I M S, is posted as Civil Surgeon to Rae Buleh

MAJOR H A SMITH, I M S, is posted as Civil Surgeon to Agra

LIEUTENANT A F HAYDEN, M B, F.R.C.S., has been appointed a specialist in Operative Surgery in the Rawal Pindi Division

WE clip the following from the *Glasgow Medical Journal* — "INDIAN MEDICAL SERVICE — At the January examination there were thirty candidates for twenty three commissions. Of that number, twenty five "qualified," and the first twenty three were admitted as lieutenants on probation. The fifth and eighth places were secured by Glasgow men, in the persons of A H Napier and D L Graham, with 3,599 and 3,431 marks respectively out of a possible 5,100. The first place was gained with 3,993 marks.

Mr Napier is a son of Dr Alex Napier, of Crosshill, and graduated M B, Ch B, in 1904. He served, while a student, with the Scottish National Red Cross Hospital in South Africa, obtaining the Queen's Medal, and after graduation held a resident appointment in the Victoria Infirmary. Mr Graham graduated M B, Ch B, in 1904, and subsequently held an appointment as house surgeon in the Western Infirmary."

CAPTAIN H WARWICK ILLIUS, I M S, has passed the Examination for Fellowship, Royal College of Surgeons, Edinburgh

LIEUTENANT COLONEL E P YOUNGERMAN, M B, I M S, has been permitted to retire from 2nd March 1907. He has been Medical Officer, 27th Light Cavalry, since 1892, and has been on leave out of India on medical certificate since 1st March 1906

ON the departure on leave of Major A W T Buist, I M S, Captain G C L Keirans, I M S, 12th Cavalry, acted temporarily as Civil Surgeon, Multan

CAPTAIN A W C YOUNG, M B, I M S, is appointed a Specialist in Prevention of Disease

CAPTAIN A M FLEMING, I M S, Civil Surgeon, Chanda, is deputed on special duty, as Civil Surgeon, Pachmarhi, C P, during the season 1907

LIEUTENANT COLONEL J ANDERSON, I M S, having taken six months' leave from 25th April, Lieutenant Colonel J J Pratt, I M S, has gone as Civil Surgeon of Lucknow, and Major C Milne, I M S, has gone to Fyzabad as Civil Surgeon

LIEUTENANT COLONEL ARNOLD, I M S (Retd), has been appointed to act as Lecturer on Tropical Diseases in Edinburgh, vice Dr Andrew Davidson, retired

LIEUTENANT COLONEL R JAMES, I M S, Durban Physician, Travancore, went on eight months' combined leave in February 1907

LIEUTENANT COLONEL J L VAN GEIZEL, I M S, Chemical Examiner etc, Madras, applied for six weeks' privilege leave from 15th May

MAJOR F J CRAWFORD, I M S, was granted eight months' combined leave to Europe from 1st May

CAPTAIN A E WALTER, I M S, is granted nine months' combined leave and Captain E A C Mathews, I M S, 10th Lancers, officiates as Superintendent, X Ray Institute, Derha Doon

WE regret to record the death of the veteran Sn Joseph Fyfe, Bait, I M S, we will publish a notice of his career later

MAJOR W J NIBLOCK, I M S, is not due out to Madras till end of October

CAPTAIN C B HARRISON, I M S, was granted two years' combined leave from 1st March 1907

CAPTAIN A MILLER, I M S, has got an extension of his combined and study leave, and is due out on 10th June 1907

CAPTAIN S A ROZZAR, I M S, has been ordered to Amritsar to act as District Medical and Sanitary Officer

CAPTAIN P L O'NEIL, I M S, has applied for eight months leave

CAPTAIN F C ROGERS, I M S, was granted 16 months furlough and study leave from February 1907

CAPTAIN T S ROSS, I M S Health Officer, Madras, has been granted combined leave for ten months from 12th April 1907

ASSISTANT SURGEON MELA RAM, in charge of the Deir Ghazi Khan dispensary, is appointed to officiate temporarily as Civil Surgeon of Deir Ghazi Khan, in addition to his own duties, with effect from the afternoon of the 15th of March 1907, vice Major E V Hugo, M D, F R C S, I M S, transferred

MAJOR E V HUGO, M D, F R C S, I M S, Civil Surgeon, Deir Ghazi Khan, was placed on special duty in the Mayo Hospital, Lahore, with effect from the forenoon of the 17th of March 1907

OUR readers who know Major Carroll's work on yellow fever will endorse the following extract from the *Journal of the Medical Association*—

'As will be noted in another column, James Carroll, of the U S Army Medical Department, has been recommended, by special Act of Congress, for promotion to the grade of Major. This, as our readers know, is a recognition of his self-sacrificing labour in connection with the experimental work on yellow fever. While a tardy one, this is an act of justice, and Congress has done only what it should have done long ago. It is proof that republics are not always ungrateful. It is not unusual for some heartburning, discontent and charges of unfairness to be engendered when, on account of important services rendered, an officer has been advanced in rank over others who have served long and faithfully. But in the case of Dr Carroll's preferment it seems that the entire medical corps of the army, as well as the officers of the other branches of the service, rejoice at the advancement recognizing as they do his single-mindedness, modesty and ardor in his chosen line of work.'

THERAPEUTIC NOTES AND PREPARATIONS

'ALAXA,' Buiouhgs, Wellcome & Co, is an aromatic liqueur of cascara sagrada, which presents in a most pleasant and acceptable condition the tonic laxative properties of the true bark in combination with stomachic and carminative principles. It is of agreeable flavour, in sharp contradistinction to ordinary fluid preparations of cascara sagrada, which are often unpleasant. It exerts a marked tonic effect upon the bowel, it assumes a normal activity and renders unnecessary the use of after dinner pills or digestive aids.

'Alaxa' is eminently suitable for use in the treatment of the constipation of pregnancy. It regulates the action of the bowel without producing irritation or griping. Whilst purgatives may adversely affect the course of pregnancy, the tonic laxative properties of 'Alaxa' maintain the normal bowel action and prevent interference with the gravid uterus.

Each fluid drachm of 'Alaxa' contains the equivalent of twenty-four minims of Liquid Extract of Cascara Sagrada, B P. The dose is, therefore, one to two fluid drachms, as may be required.

Issued in bottles containing 4 fluid ounces

We have received a reprint of an article by Dr Muller, of Hamburg, on the many virtues of VALIDOL in Gynecology. It is also reputed as a nerve sedative and heart stimulant, and has been used by German Naval Surgeons with success in sea sickness. It is obtainable at most chemists' shops in India, and is manufactured by Zimmer & Co, of Frankfurt, A M.

The medical profession has come to appreciate the many good qualities of ERGOPIOL (Smith) in many diseases of women. We have received reprints of articles by Dr C W Carran and Dr J A Black giving many cases where this drug was of great use in delayed menstruation. Dr Carran writes of Ergopiol (Smith) as an aromatic stomachic tonic, anodyne, laxative and hepatic stimulant.

We have received a copy of a high class gravure issued by BOVRIL Limited, London, entitled "A TEMPTING BAIT," which is a reproduction of the charming oil painting that was exhibited in the Royal Academy in 1906 by Arthur J Elsley.

This gravure is given free in exchange for coupons found round all bottles and jars of Bovril.

Full particulars as to conditions of obtaining these pictures are given on the leaflets wrapped round the bottles and jars.

A full and valuable account of CYLLIN (Jey's Sanitary Compound) as a disinfectant with numerous laboratory experiments by Captain J W Cornwall, I M S, will be found in the Transactions of the Sanitary Commissioner, Madras, for 3rd and 4th quarters 1906.

CORRIGENDUM—In Lieutenant Colonel Crawford's article on Wm Hamilton I M G January 1907, page 4, line 34, for date 1787 read 1784, the correct date for the removal of Hamilton's tomb and the clearing of the ground for the building of St John's Church is 1784.

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta.

Annual Subscriptions to the Indian Medical Gazette, Rs 12, including postage, in India Rs 14, including postage, abroad.

BOOKS, REPORTS, &c, RECEIVED—

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|--|---|-------------------------------------|-------------------|
| Fowler's Treatise on Surgery | 2 vols | Price 8 guineas | W B Saunders & Co |
| Sobotta and McMurich's Atlas and Text book of Anatomy | 2 vols 25s each | | |
| Dorland's Illustrated Medical Dictionary | 4th Edition, enlarged | 8vo pp 836 Price 19s | |
| Dorland's Pocket Medical Dictionary | 5th Edition | Price 5s | |
| Wilcox's Essentials of Genito Urinary, &c, Diseases (Question Compend) | | Price 4s | |
| Theobald's Prevalent Diseases of the Eye | 8vo, pp 551 | Price 19s | |
| Gould's Technic of Operations on Intestines, &c | Pp 302 Illustrations 190 | Price 21s | |
| Preiswick's Atlas and Text book of Dentistry (Hand Atlas Series) | Pp 343 44 Plates, 152 Illustrations | Price 15s | |
| Hill's Manual of Normal Histology &c | 12mo flexible, pp 458 | Price 10s | |
| McConnell's Manual of Pathology | 1 ^{mo} , pp 523 Illustrations | 170 Price 12s | |
| Lusk's Science of Nutrition | 8vo, pp 376 | Price 12s | |
| Morrow's Immediate Care of Injured | 8vo, pp 310 Illustrations | 230 Price 12s | |
| Keen's Surgery Its Principles and Practice | Vol I | Price 30s To be completed in 5 vols | |
| Wells's Chemical Pathology | 8vo pp 519 | Price 15s | |
| Webster's Text book of Diseases of Women | 8vo 712 pp, 372 Illustrations 10 plates | Price 30s | |
| Macnab's Ulceration of Cornua | Pp xiv + 196 illustrations 29 | Price 5s | |
| Baillière, Tindall & Cox | | | |
| Baillière, Tindall & Cox | | | |
| Krapelin's Psychiatry | Pp 352 Baillière Tindall & Cox | | |
| Latham's Pulmonary Consumption | Third Edition | Price 5s | |
| Baillière, Tindall & Cox | | | |
| Adams's Inflammation | Macmillan & Co, King's Obstetrics | F A David & Co | |

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM—

Capt J Fleming Barnardo, I M S, Bhagalpur, Lt Foster Reaney, I M S Jhansi Major R Heard, I M S Smla Dr Neve Kashmir, Dr Thomson Kodalkanal Lt Col D B Spencer I M S, Fyzabad Col King, I M S Rangoon Lt Col Haines R A M C Ambala Col R Macrae I M S Dacca, Capt D McCay Kasauli Capt Forster, I M S Kasauli Major Jennings I M S Bombay Major Maynard I M S Calcutta Capt Clayton Lane I M S Monghyr Lt Bouchamp Williams, I M S Bushire Persia Dr David Cook, I M S Calcutta Capt Moses, I M S Barisal, Major Vaughan I M S, Calcutta, Prof Ronald Ross Liverpool, Col D Bruce R A M C London Dr V N Brahmachari, Calcutta, Asst Surgeon Bannerjee Daulpur, Capt Standage, I M S, London Lt Col Giles, I M S, Plymouth

Original Articles

ON THE INCIDENCE OF SMALL-POX
IN CALCUTTA *

By J C VAUGHAN, M.D.,

MAJOR, I.M.S.,

Campbell Medical School, Calcutta

WE live in a land which is the ancient home of small pox. There are few points in pathology that have more fully occupied the attention of students of medicine than the question of the origin and antiquity of this disease. One of the most interesting of the earlier records is that of an outbreak of this disease in the Abyssinian army in the second year of the siege of Mecca, during the so-called Elephant War, and referred to in Massudi's "Golden Mead," as occurring about the year A.D. 370, and confirming this story according to Bruce in his "Travels to the Sources of the Nile," the chronicler narrates that flocks of strange birds ("Ababil," the Persian term for small pox), came over the sea to Mecca, each one carrying in its beak and in its claws stones as large as a pea, which they let fall upon the Abyssinians, so that their armour was pierced and the whole army slain; this was the time, the narrator adds, when small pox and measles first broke out in Asia (Hirsch). History, however, does not bear out the idea that it was at this time that Asia thus received its first visitation, or that it received it from Africa. Holwell, whose name is well known to most of us, in his "Account of the Manner of Inoculating for the small pox in the East Indies," refers to immemorial Brahminical tradition and to the ancient description in the Atharva Veda of the Temple service and prayers, used by the Brahmins of that day at the ceremonial inoculation with small pox. My own information would show that those ceremonials date back to not less than the third century B.C., and that it may be taken as fairly certain that if this ceremonial is as old as that, the actual fact of the known prevalence of small pox in India may be taken as many centuries older. Indeed, Hirsch, as the result of his historical research, clearly declares that the native foci of small pox may be looked for in India, and that among the regions of India most severely visited are many parts of the Presidency of Bengal, and the plains of Orissa. The reference to Bengal is dated 1835, and unquestionably principally refers to the region around Calcutta, i.e., to Lower Bengal, as it was then, i.e., deltaic Bengal and deltaic Orissa, and the hill slopes in immediate relation to these deltaic areas. And in spite of all this historical evidence, ancient, mediæval and modern, we have at this day, extant among us a fable, which has even quite recently been voiced by the lay press, to the effect that it is only once in five years that Calcutta is visited by small pox. We have records, not as ancient perhaps as Massudi, but perhaps more reliable, in the archives of the Health Office of Calcutta, which show that the truth is that except for a few months at a time, small pox is never really absent from Calcutta, and the records quoted in the reports of the Health Officer go to show that since the year 1832 there has not been a single year in which this city has been absolutely free from mortality due to small-pox. The figures in table (1) show the deaths actually recorded in Calcutta year by year from 1832 to 1905, and the inference to be drawn from them is clearly more or less as follows. In the first place, the disease is always or practically always with us except for a few odd months now and again, and in the course of its perennial presence it develops periodically an epidemic character.

These epidemic outbreaks leave their traces and are marked by increased mortality, and judging from the records of deaths, these epidemic outbreaks extend over periods of from one to three years. The intervals between epidemics would appear to extend to from one to four years and to be dotted over with a steady dropping fire of "sporadic" cases, occurring mostly between the months of October and May. Indeed, both in the epidemic outbreaks and in its non epidemic appearances, small-pox in Calcutta shows this same preference for this period of the year, i.e., from October to May. As regards the interval from May or June to October, this is most marked in the non epidemic years, but in the epidemic years the disease seems sometimes to go on all through the year, and I am inclined to think that there may be varioloid cases, unnoticed and unreported, that keep the infection alive in Calcutta all the year round. This may be to some extent an explanation of the prolongation of those periods when small pox causes a comparatively high mortality in Calcutta over two or three consecutive years. In last year's epidemic, for instance, the small pox hospital was actually empty for only about six weeks, and this year we are involved in another outbreak. Seeing that the seasonal prevalence follows practically the same curve both in epidemic and non epidemic years, and admitting the difficulty in diagnosis between varioloid and varicella, it seems not unreasonable to suppose that even in non epidemic years the disease, even though unrecorded over certain periods, never wholly disappears. By these remarks I do not cast the smallest aspersion on the Health Department. But if these conclusions are justified, it only emphasises the argument that no Health Department can do its best, except it receives a whole hearted and willing support from the population among whom it works, a factor which in Calcutta is sadly wanting.

Another factor that must have a considerable influence on the incidence of small pox in Calcutta is the incidence of small pox in the districts immediately surrounding Calcutta. The difficulty, however, is to trace this influence. In table (2) is a series of figures taken from the reports of the Sanitary Commissioner for Bengal, shewing the numbers of deaths from small-pox, recorded in Calcutta and in the districts around Calcutta, within about 150 miles of the town, during the 12 years from 1894 to 1905, both inclusive. These figures cover a period during which the Sanitary Commissioner's Reports are perhaps comparatively most accurate, and one during which railway and other facilities for traffic and travel have considerably improved over the area referred to in the table. With the exception, however, of the Howrah district, these figures seem to indicate no definite relation between the prevalence of small pox in Calcutta and that in the neighbouring districts, that is to say, there is no constant or regular correspondence between Calcutta and these districts from year to year, in the degree to which they are affected by small pox. Examining these figures, we may note that the years 1895, 1900, and 1901, are those which shew the highest mortality for Calcutta, and it is just these same years that show a corresponding high mortality for the districts, but the districts shew other years of mortality, high or fairly high, during which Calcutta shows a mortality, which (having regard to the comparative density of their respective populations) is decidedly lower than that in the districts. It is absolutely impossible to trace the chronological sequence, relatively to one another, of the cases in Calcutta and those in the districts, and I doubt, if such evidence were available, whether it would do anything but confuse the issue. In the absence of definite evidence to the contrary it seems from the figures in table (2) fairly clear that although the district may to some extent be responsible as infecting Calcutta, Calcutta also undoubtedly infects the districts.

If next we examine the small pox figures for the principal municipal areas within 150 miles of Calcutta,

* Being a paper read at the Medical Section of the Asiatic Society of Bengal, April 1907.

we derive from them an argument which is for practical purposes the same as that gathered from the districts. The figures in table (3) shew the deaths from small pox in 33 municipal areas around Calcutta, over a period of 12 years corresponding to those in table (2). Taking tables (2) and (3) together, it seems as if the incidence of small pox from year to year offers no clear indication that the disease has in any way preferred the main lines of traffic and travel. Taking into consideration the argument to be gathered for the records in many years' reports, both in the Calcutta Health Office and in that of the Sanitary Commissioner for Bengal, it is clear enough that the disease is practically never absent from our great centres of population or from their immediate vicinity. Hirsch is of opinion that there are only two factors which determine the occurrence of an epidemic of small pox on the one hand, the necessary number of persons susceptible of the morbid poison, and, on the other hand, the introduction of the virus itself. As a corollary, it follows that there are two great canons to be observed in all dealings with small-pox, *viz.*, segregation and protection. In the moribund we know that the first is practically disregarded and the second very inadequately enforced,—how are they observed in Calcutta?

Segregation in Calcutta may be considered from two aspects, (1) the segregation of cases that do not come to hospital, (2) the segregation of those that are treated in hospital. As to the first of these, cases treated in private practice are very often quite effectively segregated in private residences, but I fear a large proportion of them are more of a danger than they are believed to be by those responsible for their management. Then there is a set of cases in which there is a difficulty in diagnosis, as between varioloid and varicella, to which I need not farther allude. Besides these, in Calcutta, there is a considerable number of cases which are only brought to the notice of the profession after a good deal of potential or even actual harm has been already done, and for which the public alone is responsible, and a not inconsiderable number who never come at all to the notice of the profession and for whom also the public is responsible, *viz.*, the wandering unreported cases, who go about our streets when well enough, with their scabs all crumbling off them, spreading infection, unrestrained and irresponsible.

Turning next to the segregation of those treated in hospital, we have in this metropolis only one small pox hospital for Calcutta and Howrah combined, and forming one of the departments of the Campbell Hospital. It is just a question whether hospital segregation as practised is all it should be. Two matters present themselves for consideration. These are—(1) How are small pox cases taken to the hospital? (2) Is the small pox hospital, when full of cases, a danger to the public health, as a nucleus where potentialities for infection are concentrated, and from where infection may spread to the rest of the town?

As to the first of these, small pox sick are brought to the Campbell Hospital in private carriages, hackney carriages, bullock carts, in palanquins used as public conveyances, on beds, charpoys, and even in pieces of gunny slung on poles, while some have walked to hospital either alone or supported by their friends, and a certain number have been brought in ambulances kept for the purpose. Now, let us consider what this means to the public health. The small pox hospital only just touches the fringe of the small pox in Calcutta in epidemic years. In the year 1906 there were only 734 cases of the disease treated in the hospital, but there were no less than 2,314 deaths in Calcutta from small pox. What was the number of cases in the town? It has been the same year after year. It means that the admissions to the hospital scarcely represent, at the very outside, ten per cent. of the actual incidence of cases in the town. If this be so, it means that if public conveyances are used to bring cases to hospital, they are unquestionably also used to carry cases elsewhere. Imagine the washing

down of a palanquin or of a ticca gharry or of a bullock cart with disinfectant lotion, and consider when you can do nothing more, how far you would care to guarantee the thorough disinfection of such conveyances in such a way. And if you cannot say much for such disinfection, what about the public conveyances which carry small pox sick, and are never disinfected at all! And one thing more. The conveying of small pox sick to the hospital by ordinary public conveyances affords to the uneducated native mind a certain moral approval of the idea of employing of public conveyances for the carrying of small pox sick about under any circumstances that may occur, disinfection or no disinfection!

Briefly, it comes to this, that the carrying of small pox sick to hospitals by any means short of using a special ambulance is in itself a danger to the public health, arising out of the system of using of special hospitals for the segregation of small pox sick. Now, there are in Calcutta certain arrangements which may be euphemistically termed ambulances for small pox cases, but they are most uncomfortable things of their kind, and patients have often complained to me most bitterly of their experiences while being carried in them to the small pox hospital, and I am convinced that to have uncomfortable ambulance arrangements for infectious cases is the most certain method of insuring that the ordinary means of public conveyance will be preferred by infectious sick to regular ambulance. I would therefore strongly urge that all ambulances, especially for infectious sick, be made as comfortable as possible, that there be enough of such conveyances, and they should be so built that they can be readily and efficiently disinfected, so that keeping them in handy situation may be free from risk.

The second question is, whether the congregation of small pox sick in hospitals, placed like the small pox hospital at Sealdah, is a danger to the public health, and whether it can in any way be held to account for the persistent presence of the disease in Calcutta, or for any enhancements of the periodic epidemics with which we are familiar. This question has for some years been the subject of much controversy, in England especially, and there is a good deal of interesting reading on both sides of it. On the one hand, there is the well known argument of Dr Power and those who hold with him, that small pox hospitals undoubtedly actively infect inhabited areas immediately surrounding them, especially when they are full of patients, and one of the latest pronouncement on the subject is to be found in the 34th Annual Report of the Medical Officer to the Local Government Board for 1904-05, in the reports on the small pox hospitals at Sheriff Hill in the borough of Gateshead, at Felling and at Liverpool. The report is too long to refer to in any full detail in this paper, but there is no doubt of the cogency of the argument herein advanced. As regards the Sheriff Hill Hospital, the reporting officer held that it was directly responsible for a considerable part of the small pox that occurred in its vicinity, and, as regards the three small pox hospitals in Liverpool, the conclusions of the reporting officer may best be given in his own words as follows—“On consideration of all the facts here recorded, there can be no question as to the conclusions to be arrived at, namely, that, (1) Inhabited areas within a mile of each of the three Liverpool hospitals have suffered more severely than the city as a whole. (2) Exceptional incidence of small pox within these areas has corresponded in point of time with the use of these hospitals for the treatment of acute small pox cases. (3) Broadly speaking, within these hospital areas, the dwellings nearer to hospital have sustained a far heavier incidence of small pox than those farther away.”

These conclusions are much on the same lines as those advanced by Dr Power on the London small pox hospitals in 1884. On the other hand, Dr Savill (Warrington outbreak, 1892-93) and others have found that there were so many elements at work for the conveyance of infection by direct means along the lines

of human intercourse (more especially in the vicinities of the hospitals), that the hypothesis of aerial convection is held to be unnecessary. That a small pox hospital in a poor and crowded locality may be, and usually is, a source of infection to the surrounding neighbourhood is not denied, but the incoming and outgoings of the staff, the calls of tradesmen and friends of the patients, and the bringing of the patients to the hospitals, are all dangers which of necessity become intensified as the centre is approached, and may in themselves account for this circumstance. One consideration which causes many to doubt the correctness of the aerial convection theory is the immunity from attacks constantly observed in the large numbers of presumably susceptible individuals living near small pox hospitals. Moreover, no infection has, so far as known, spread to the passengers in boats and ships passing up and down the Thames at Long Reach, where the London small pox ships are now moored, the explanation being that in this case the element of direct or indirect personal communication is non-existent. Dr Power's views, then, are thought by many to be adequately explained by the possibilities of direct or mediate infection from the hospital.

A Local Government Board circular on "The Provision of Isolation Hospital Accommodation by Local Authorities" has, with a view to lessening the risk of infection from small pox hospitals, laid down the rule that a local authority should not contemplate the erection of a small pox hospital—first, on any site where it would have within a quarter of a mile of it as a centre, either a hospital, whether for infectious diseases or not, or a workhouse, or any similar establishment, or population of 150 to 200 persons, and secondly, on any site here it would have within half a mile of it as a centre a population of 500 to 600 persons, whether in one or more institutions, or in dwelling houses. Cases in which there is any considerable collection of inhabitants just beyond the half mile zone should, says the circular, "always call for special consideration". The law in England, however, has not always recently held this view, although the Local Government Board seems to support Dr Power, as indeed in duty it was only bound to do. That summarizes the attitude towards this question in England of the profession and of the executive. In India, I am not aware whether this question has seriously been considered from the standpoint adopted by Power, but it may be as well to consider it as it applies to the case of the relation in this respect of the small pox hospital (at the Campbell Hospital) to Calcutta, and to see what has been the influence in this respect of the Campbell Hospital on its surroundings. And in considering this question, let us keep to the terms of the report on the Liverpool hospitals, by Dr Reece, from which I have quoted, that is to say, the terms of the three conclusions arrived at by him. In this connection I would call attention to the tables, Nos 4, 5, 6, 7 and 8 which cover a period of 12 years during which records of this kind have attained a reliable, or fairly reliable degree of accuracy for this country. These particular figures are taken from the reports of the Health Officer for the city of Calcutta and are, I think, the most reliable that can be obtained.

The small pox hospital, placed where it is, has no "town area" within about 500 yards of it anywhere, except along the northern edge of Entally, but on its south and west sides, the quarter mile zone is dotted over by the buildings occupied by the menial staff of the Campbell Hospital, and by the buildings used as the wards of the Campbell Hospital. The menial servants' quarters just referred to are huts of wattle and daub, and of a material which is perfectly calculated to retain infective material, and they are occupied by a population of about 250 persons who always live there and of whom the adults are employed in the general wards of the Campbell Hospital, and some of whom indeed, from time to time, work in the

wards of the small pox hospital itself. The hospital wards are, some of them also, "temporary" structures, built of the same materials as the servants' quarters noted above, while others are masonry buildings. The "temporary structures" are, however, amongst the buildings lying nearest to the small-pox wards, and immediately next to these "temporary" buildings and about 250 yards from the small pox wards there stood until a few weeks ago the old main ward of this hospital which contained a maximum of 410 patients, and whose inmates numbered on an average over 300 persons from one day to another. Besides these there were about 170 other patients scattered in various wards, all in the quarter mile zone, and a school of 250 medical students, working in these wards and attending lectures in the dissecting rooms situated within 40 yards of the nearest wards, in which acute small pox cases are treated. The students of the Medical School and the inmates of the general wards and the menial staff of the hospital are on the whole no better protected than the general population of Calcutta, so that we have here had, within the quarter mile zone, constantly present, an average population of about, say, 170 servants, say 450 sick, and say, about 250 students, resident medical officers, teaching staff of the school, office staff, etc., and when to these we add the children living with their parents in the servants' quarters, the total of those always within the quarter mile zone or practically throughout the year Surely this is enough for aerial convection to work on. Nevertheless, during the five years that I have known this hospital, there has been only one solitary instance in which small pox has been known to actually have been taken by a patient after admission to the Campbell Hospital, that is to say, in which a patient has developed the disease at any time more than 12 days after admission, and by the irony of fate this case occurred too, since I began to write this paper! For the rest of the city I appeal to the figures in the tables which show the incidence of small pox in the city wards within a mile and a half of the hospital as compared with the rest of the town, and the monthly incidence of the disease, as shewn by cases in the years 1897, 1900, and 1901, the years of greatest mortality among those in the tables given.

Arguing from these, it would appear that, following Dr Reece's points, there is *nothing to shew that*, (1) the inhabited areas within a mile of the small pox hospital have in the last 12 years suffered appreciably more than the city as a whole, (2) within these "hospital" areas the dwellings nearer to the hospital have sustained a far heavier incidence of small pox than those farther away. With regard to the third point, it is not easy to argue in the absence of figures especially put together to shew the time relation of cases occurring within the "hospital" area and those in the hospital itself, and those outside the "hospital" area. Unless such figures are put together on the spot and at the time, they are not of much use on account of the error that is likely to creep in as bearing on the incubation period of small pox. Certainly, in Calcutta, the examination into the facts in the working out of such detail with any thing like necessary accuracy, would be under almost any circumstances a matter of no small difficulty. In such a case such figures as we have are, I think, of a nature, serious degree responsible for small-pox in the town. The very remarkable freedom from attack of the population of patients, students, staff, and servants, and the latter's children, is a very strong argument against aerial convection as one of the principal of the influences to be dreaded as emanating from such hospitals. That the disease may spread from small pox hospitals in some way or another is not denied, but it is quite another matter to make aerial convection responsible for all that it has been saddled with. Certainly,

as far as Calcutta is concerned, the small pox hospital seems to me to be a very small factor as compared with other influences favouring the spread of the disease, and certainly, as far as the native population is concerned, its influence is as that of a drop in a bucket. Taking the average death rate in the hospital as about 35 per cent over the last 12 years, it would appear that scarcely 10 per cent of the small pox in the town ever comes to hospital. Is it then that the small pox hospital may therefore be practically disregarded as a source of infection? If on account of the degree to which it may by aerial convection, or by contacts spread the disease, —the prevailing wind during most of the small pox season is the south, and there is nothing to the immediate north of the small pox wards, except the goods shunting yard of the E B S Railway. It may be argued that it would be better to remove it. Where could it be removed to, to be far enough off to be no longer a source of danger, and yet be near enough to be useful, near enough to be convenient, and yet not removed so far that its removal should create distrust of it, and thus materially hinder its usefulness?

There is no doubt about it the segregation of small pox sick in Calcutta is not carried out anything like as fully as it should be, and this is a matter which needs all the encouragement that can be given to it by the heads of the various communities that make up the public of the second city of the Empire, and before any blame is thrown on the small pox hospital, Calcutta must see to it that all other influences favouring the spread of the disease are effectively dealt with. In Calcutta we certainly cannot boast of the perfection of either our segregation or our protection. It is useless to wrap ourselves up in the consolation that even if we continue to have big epidemics, our population has increased so that our epidemics must necessarily be big, for then we are faced with the argument that last year's outbreak, even though it occurred in an increased population, resulted in the biggest mortality recorded in Calcutta for the last forty years, and that this great outbreak has been one that has followed on forty years of vaccination in this part of the country, and on forty years experience and practice of sanitation and of public health measures in the metropolis of India. Next as to protection. The tables appended, Nos 10 and 11, give details of the cases treated in the small pox hospital in the past thirteen years, and their character and of the incidence of vaccination among them, and it speaks for itself. If there is any lesson to be learned from these figures, it is that of the value not only of vaccination but of re-vaccination. Dr Barry found in the Sheffield epidemic of 1887-88 that unvaccinated children under ten years of age were 20 times more liable to attack than the vaccinated, and unvaccinated persons over ten years of age are five times more liable, and under ten years of age in unprotected children the attack is 22 times more likely to be fatal than in the vaccinated, while over ten years of age the risk of death is eleven times as great in the unprotected as in the vaccinated. It follows, therefore that when there is an epidemic of small pox in full swing, unprotected children run a risk no less than 440 times as great, and persons over ten, a risk 55 times as great as those that have been vaccinated. Moreover, severe attacks are in those over ten years of age, about five times as prevalent as among the vaccinated, and in children under nine years of age they are nearly nine times as prevalent. Having regard to the fact that only some 10 per cent of the small-pox cases in the town come to the hospital, the figures in table (7) give an indication of the enormous margin of unprotected sufferers that there must be in epidemic outbreaks in Calcutta, and the very large unprotected population that there must always be in the town, constituting by virtue of their unprotected state a great and abiding potential danger to their neighbours. So much for vaccination. As for re-vaccination, the lesson from the figures is just as clear. There have been a very large number of cases

admitted who had been vaccinated once only in childhood, and some of these have been of even a malignant type. Unfortunately there are very few figures available covering the thirteen years now under review, showing the length of time that had intervened (in the cases admitted who had contracted small-pox after previous vaccination) between the vaccination and the attack, but such as there are to my mind unquestionably teach the lesson that re-vaccination is just as necessary or nearly as necessary in a country like India especially, as primary vaccination, and that whenever there is any recrudescence of small-pox, vaccination and re-vaccination should never be omitted. It is indeed time that the medical profession should bring it home to the public that vaccination is like other protective inoculations, that the protection it confers is certainly not for a lifetime, but is limited by certain conditions which being themselves more or less indeterminate, are not easy of definition. Thus, for instance, leaving out of count for the present those persons who are either naturally practically immune against small pox and those who are inordinately prone to take it, and bearing in mind the fact that with most ordinary people a man's susceptibility to take the disease varies from time to time, it follows that the protective value of vaccination must vary with the following conditions —(1) the strength of the vaccine virus with which he is vaccinated, (2) the strength of the small pox virus to which he is exposed, (3) his degree of susceptibility at the time of his being exposed to the small pox poison, (4) the real and not the apparent success of the vaccination to which he is subjected. For practical purposes if a man is really immune to vaccination, he is immune to small pox. There is so vast a difference between the inconvenience and risk to one's self and to one's neighbours between even a mild attack of small pox and a very severe vaccination reaction that there is no reasonable ground for not being quite sure on the point that one is actually and really immune to vaccination. One too often hears small pox patients say, "Yes, I was vaccinated as a child, and I was done again last year, but it did not take, and I did not try again." Perhaps, if he had tried again, it would have taken. To go into all that bears on this would make this paper too long, and we are all sufficiently acquainted with all that I could tell you. Turning from these matters, touching the mitigation of the incidence of small-pox in Calcutta, I would next ask your indulgence, while I bring before you a few interesting clinical details noted during the recent outbreak. An interesting detail brought out by table (7) is the number of second attacks recorded. We have had at least two instances of patients who have had two attacks in two consecutive years. In one of these the second attack proved fatal, and in my own experience I have seen one case in which a man had three attacks, all confluent, in three consecutive years.

Another is that, as to the systemic effect of the disease, we have often noted that in unvaccinated subjects, a severe attack is liable to be followed by marked loss of flesh, followed by prolonged debility, a sequel not nearly so often observed even in severe cases where the patient has had the benefit of vaccination.

Again, I have often seen it in print that restless small pox patients should be allowed to get out of bed in the acute stages of the disease. I am very much against this.

As to the treatment of the eruption, we have been for years in the habit of applying oil to the body freely, in the form of olive oil, carbolic oil, or oleum arachidis. This treatment is supposed to limit the danger of infection spreading from the patient, but when the scabs begin to form, there is a horrible smell of the mingled odour of rancid oil and pus, which in a ward full of patients is beyond description, and I should say an index of undesirable sanitary conditions. Moreover, this

*g Incidence of Small-pox in areas adjoining the Campbell Hospital
to May 1896 :—*

OF HOURS DURING THE MONTHS OF JANUARY, FEBRU-
H, APRIL AND MAY 1906 WITH WINDS FROM EACH OF
POINTS WERE.

Y —N. 166, N. E. 37, E. 103, S. E. 22, S. 19.

R O A

● INDICATES DEATHS IN JANUARY & FEBRUARY

+ " " MARCH

☆ " " APRIL & MAY

E

poxes this may go on for perhaps four or five days or
more and until this has ceased I do not think it wise
to declare patients free from infection

of his patients with sticky unguents as a first line to
prevent the excursions of wandering microbes So I
do not think that Major Vaughan's results in any way
affect the conclusions of Mr Power and others that

treatment was very often followed by crops of boils and was no check, whatever, on pitting.

By far the most effective of all treatment is Leventauer's application of a mixture of three parts of salicylic acid, thirty parts of starch and seventy parts of glycerine. He applies this to the face on a mask, which I think, is a worry to both patient and nurse. I apply it to the whole body and face freely, direct, without any mask, painting it on with a pledget of absorbent cotton, and using it very freely several times daily, from the very first flush of the rash. So far in my hands it has given the very best results even when begun after maturation had taken place. It has absolutely prevented pitting in almost every single case, there is no smell from the patient, it is extremely soothing, and the boils that bothered us so much are scarcely met with. I am now trying with remarkable success so far a mixture of salicylic acid, starch, and oleum arachis, as glycerine is so very much more expensive than the oil, and when each patient takes about 3vi per day, it is a matter for consideration if one has 70 or 80 cases on hand at a time for a month or two or more. The glycerine preparation is, however, very much improved by adding to it a little essence of Lavender or Eau de Cologne. In the matter of eye affections I am indebted to Major F. P. Maynard, R.M.S., for advice, on which I have used methyl blue in a strength of gr 1 to 3i of distilled water. I start the use of this as a matter of routine as soon as a case is admitted, and since I have made this the rule, eye troubles have practically disappeared.

In the diagnosis between measles and small pox, we are told by certain writers that the so-called "Grisolle sign" is a "certain means of diagnosis." In Moore's text book on the Eruptive and Continued Fevers (1892), we are told that "if on stretching an affected portion of the skin the papule becomes impalpable to the touch, the eruption is caused by measles, if on the contrary, the papule is still felt when the skin is drawn out, the eruption is the result of small pox."

While in no wise detracting from the value of this rule, I would point out that there are even when small pox is prevalent, other things which cause non-deleble papules besides small pox. Inflamed mosquito bites I have more than once seen to very closely resemble the papular eruption of variola.

The eruption, when healing, leaves in some skins a pitting, with or without pigmentation, in others only a number of pigmented spots, and in others again, a reddened spot on the site of each pock which lasts a few weeks. In a certain number it heals, leaving at the site of each pock, a raised papular nodule, which takes shape as the pustule dries, and as the scab forms. When the scab has quite fallen off, the healed pock shows up in fair skins as a red pimple with sometimes an injected area around its base, and this appearance it tends to maintain for perhaps some days or weeks, during which time it gradually fades away, leaving neither pit nor scar. This is how the pock usually heal under treatment with Leventauer's application referred to, and with my modification of it, using oil instead of glycerine. The appearance of such cases may, and in some instances has given rise to doubt in the minds of those who see them as to whether they are still infectious or not. I have in my mind the case of one of my patients who had for a full week been without the vestige of a scab on her body and who for a week previous to her discharge had had plenty of hot baths, and who, on discharge from hospital with these pink spots on her face, was accused of travelling by rail, while still suffering from small pox, and narrowly escaped a criminal prosecution! As bearing on the discharging of recovered patients, I would make one more point. In a number of cases, after the scabs have fallen off, there appears within about 48 hours, a secondary desquamation of fine branny scales from the sites of some of the pocks. This may go on for perhaps four or five days or more and until this has ceased I do not think it wise to declare patients free from infection.

Dr. Nield Cook said—"Major Vaughan has described an outbreak of small pox unprecedented in its severity in recent times, and, as I am responsible for the control of infectious disease in Calcutta, I think it is due from me to say what has been done by the Health Department of the Corporation to cope with the epidemic. The first requirement of a medical officer of health is that he should receive early notification of all cases of infectious disease. The Municipal Act requires all medical practitioners to give early information of any case of dangerous infectious disease of which they become cognizant, but as it has been shown that more than half the people in Calcutta die without being seen by a medical man, this provision of the law is of very small value. As a matter of fact, last week with 87 deaths from small pox, only 102 cases were reported. I suppose there were at the same time at least 300 unreported cases. It follows from this that any attempt to restrain the infection by isolation and disinfection is foredoomed to failure. So, though isolation has been strongly recommended in most of the known cases and insisted on in a small proportion, it could not have any marked effect on the control of the epidemic, and the same may be said of disinfection which is carried out in all known cases as a matter of routine. Consequently I have concentrated my forces on the protection of the population by vaccination. An ample supply of good glycerinated lymph has been maintained, notifications have been made in the daily papers, proclamations have been made in the streets, I have gone down native streets with my vaccinators inducing the people in the bazars to get protected on the spot, and I have seen them stopping the coolies as they came along the streets and using their best powers of persuasion upon them. Altogether about 110,000 vaccinations and revaccinations have been done in Calcutta since the beginning of the outbreak. I frequently look at the arms of the children playing about the streets, and almost invariably find good vaccination marks. The classes who provide most of the unprotected are the Marwaris and up country men, who come up for work and form the floating population as they are generally unwilling to be vaccinated. So I think it will be admitted that the severity of the outbreak is due to the people themselves not availing themselves of the protection freely offered. The supply of ambulances for the removal of infectious cases is admittedly inadequate, and I have repeatedly reported on it. When I first came to Calcutta, I got sanction for 30 Bombay ambulances, in view of the approach of plague, but they were regarded with suspicion, and one of them was publicly burnt in the street with the result that Government ordered us to discontinue their use and they were subsequently converted into dung carts. This has made the Commissioners rather chary of voting sums of money for ambulances, but last year I got sanction for six stretchers on wheels which were made by Dykes & Co., and are now in use. They have rubber tyred wheels, good springs and canvas hoods. I don't think, however, that any ambulance that could be devised would be more comfortable to a small-pox patient with a free eruption over his body than the *bynaghi's* bed of nails to the ordinary man.

As regards the danger of the Campbell Hospital acting as a focus for the dissemination of small-pox, three points occur to me. One is that the amount of infection in the neighbourhood of the hospital is so great as shown by the spot map I had prepared, that a number of cases which would be considered sufficient proof in a pox free neighbourhood would not be noticed, the second, that Major Vaughan requisitioned a considerable amount of glycerinated lymph, and I have no reason to doubt that he used it for the protection of his nurses, menials and patients, and the third is that he vainished the bodies of his patient with sticky unguents as a first line to prevent the excursions of wandering microbes. So I do not think that Major Vaughan's results in any way affect the conclusions of Mr. Power and others that

aerial dissemination of small pox may occur from small pox hospitals, though no unbiased jury of his professional colleagues would convict my friend the Major of knowingly or unknowingly spreading a dangerous infectious disease, and we should not be justified in advising Government to move the small-pox hospital from its present site. I feel personally indebted to the reader of the paper for giving me so much valuable information about the epidemic which I could not have obtained from any other source, and some of which I hope to utilize in my official report.

Major Vaughan said—"Replying to Dr Cook's criticisms, I would say that the remarkable freedom of the staff of the Campbell Hospital is a feature which has continued for the past five years as far as I know, whereas it was only last year that such large amounts of lymph were got from the Health Office. I do not pretend to work without using every reasonable precaution that I can use. I admit that we have been fortunate in this respect, but we have also done our best. The "varnishing with sticky unguents"—which by the way is very soothing to the afflicted, is, I certainly think, effective in checking the spread of infection. As to air convection, all I want to show is that it scarcely applies at all in the case of the

Campbell Hospital. There is too much small-pox in the vicinity to draw any clear conclusion on these lines. Indeed, if it is the case that, as Dr Cook has said, in the course of a certain week only approximately one-third of the cases occurring were reported, then I fear my estimate that ten per cent of the smallpox in Calcutta comes to hospital must be proportionately altered to only three per cent, and if at the height of an epidemic, the small pox sick in the Campbell hospital represent only three per cent of the evil, what must be the real condition of the town! Of course, it can only be at certain times that this three per cent ratio obtains, but my own feeling is that Dr Cook is not far wrong, and that this great preponderance of unsegregated small pox is to be met with from time to time at all stages of an outbreak, but especially after it has become well established. Dr Cook's remarks, following on mine, would seem to indicate that in the Metropolis we have a state of things that no health department in the world could hope to cope with, and no Government could ever provide against. It is to the leaders of the various communities that form the public of Calcutta that one must turn, and until the Calcutta Public takes the bull by the horns, the city will remain as it has always been in the past, constantly infested with small pox.

I

Deaths from Small-pox from 1832 to 1906

Taken from the Report of the Health Officer of Calcutta for the year 1906

Years	Deaths from Small pox	Years	Deaths from Small pox	Years	Deaths from Small pox	Years	Deaths from Small pox
1832	679	1851	32	1870	151	1889	99
1833	2,548	1852	59	1871	33	1890	372
1834	36	1853	19	1872	18	1891	18
1835	33	1854	113	1873	34	1892	21
1836	16	1855	61	1874	125	1893	31
1837	266	1856	178	1875	775	1894	405
1838	1,567	1857	3,177	1876	71	1895	2,220
1839	81	1858	123	1877	67	1896	69
1840	22	1859	54	1878	1,495	1897	161
1841	56	1860	64	1879	772	1898	85
1842	25	1861	58	1880	114	1899	61
1843	336	1862	48	1881	133	1900	1,010
1844	2,810	1863	100	1882	17	1901	2,097
1845	67	1864	633	1883	73	1902	127
1846	78	1865	1,923	1884	478	1903	59
1847	33	1866	83	1885	155	1904	74
1848	107	1867	35	1886	15	1905	272
1849	1,725	1868	43	1887	2	1906	2,311
1850	4,430	1869	39	1888	12		

II

Table showing the prevalence of Small-pox in the Districts around Calcutta, and in Calcutta and in the Campbell Hospital

	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905
Burdwan	44	399	404	543	329	71	68	504	268	698	514	317
Hooghly	63	400	81	234	60	31	206	697	422	154	75	38
24 Pergunnahs	78	683	152	151	100	109	341	1,053	1,631	413	238	43
Midnapore	294	1,534	1,014	976	403	190	1,019	6,958	17,841	3,966	569	308
Howrah	54	482	62	271	12	35	324	660	355	225	57	134
Calcutta	405	2,220	69	161	84	62	1,010	2,097	127	50	74	272
Campbell Hospital	70	279	13	64	12	18	102	186	10	2	4	28

N.B.—Of course the deaths in the Campbell Hospital bear no direct proportion to the deaths in the districts, but they occurred among cases derived from Calcutta. These figures are taken from the Sanitary Commissioner's Reports and are the most reliable information available. They do not seem to indicate any definite relation between the prevalence of the disease in Calcutta and the surrounding districts, nor does the comparative prevalence of the disease in Calcutta and its surroundings seem to have been influenced by the improvement in the means of communication brought about by the opening of railway routes. In other words, the disease and its prevalence seems to have been absolutely uninfluenced by the lines of traffic.

III

Table showing the deaths from Small-pox in the Principal Municipal areas in the neighbourhood of Calcutta during the years 1894—1905

TOWNS	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905
Burdwan	1	70	6	3	54	2		12	3	28	7	14
Asansol						2		5	1	3	1	1
Ramganj	2	2	48				7	1		1	1	1
Hooghly	10	45	4	7		1	12	57	6	3		
Chinsurah	1	14	4	85	4		11	82	49	2	7	2
Uttarpara	1			6	1			3	1			
Baidyabati	1	11	1	13	4	1	3	12	16	30	18	
Bhadreswar	7	14	20	29	6		8	3	2		5	1
Howrah	11	65	12	197		25	172	117	21	97	33	89
Billy	1	25	2	7	1	3	7	15	4		7	
Cossipur Chitpur	5	36	6	7		1	9	26	2	4	1	
Maniktolla	7	30	4	3	1	1	10	51	6	1	1	2
South Suburban	11	17	3			1	19	18	4	1		2
Garden Reach							1	1	1	1		1
Budge Budge								1	1	1		1
Barnagore		76	9	9		5	18	49	3		2	
Kamruihati							9	20	3	1	1	
Rajpore	3	10				2	1	11	3		1	5
Bairupur		2						2	2			1
Joynagar		3	1	1				11	2	1		
North Dum Dum		38	20		1		12	23	1	3	2	1
South Dum Dum	1	22		4			16	27	3			1
Khardaha (S. Bankpur)		40		6	3		4	1		1		
Halisahar										2	2	
Titagarh										1		
Panihati								3	1	1		
Nawabgunj	1	13	2	24	12		13		15	1	3	
Garulia								1	1	1		
Narhati		11	6	1	1	2	8	18		2		2
Bhatpara							4		1	3	11	4
Burasat		2			1					1		
North Bankpur									5			
Gobindanga												
Basirhat			1				4					
Baduria	3	8						1		1	1	
Taki		5						3	3		2	
Calcutta	405	2,220	69	161	84	62	1,010	2,097	127	50	74	272

IV

Table showing the monthly incidence of cases from small-pox during the year 1897 in the Campbell Hospital, and in the areas averaging one and a half miles around it

AREAS	January	February	March	April	May	June	July	August	September	October	November	December	TOTAL
Campbell Hospital	12	2	2										17
Entally	1		4		5	2			1				16
Taltollah				4	1								2
Paddopukur	2	1		1									4
Bow Bazar	2												2
Moochipurrah		2	2		1				1				6
TOTAL	17	5	8	6	7	2			2				47
Remainder of Calcutta	10	10	22	25	30	11	1	3					114
All Calcutta	27	15	30	31	37	13	1	3	4				161

V

Small-pox cases reported during 1900

	January	February	March	April	May	June	July	August	September	October	November	December	TOTAL
Moochipura	8	13	11	23	6	7	2				2	14	86
Bow Bazar	1	1	3	2	1	2		1	1			25	39
Puddopukur		3	3	3	5	5						18	37
Taltollah		1	7	6	3	1		1				29	48
Entally	2	11	18	7	2	12	1			1		12	56
Campbell Hospital	1	4	4	4	4						1	2	20
TOTAL	12	33	46	45	21	17	3	2	1	1	5	100	286
Remainder of Calcutta	47	86	149	202	211	125	75	54	54	27	74	206	1,312
All Calcutta	59	119	195	247	232	142	78	56	55	28	79	306	1,598

VI

Table showing the monthly incidence of Small pox during the year 1901 in the Campbell Hospital and in the areas averaging one and a half miles around it

AREAS	January	February	March	April	May	June	July	August	September	October	November	December	TOTAL
Campbell Hospital	1	10	6	5	1	1							24
Entally	25	33	73	46	17	2	2						199
Taltollah	25	22	27	33	6								113
Puddopukur	14	23	45	10	11	1	2						106
Bow Bazar	21	21	26	19	8								108
Moochipurah	38	48	72	42	11								214
TOTAL	124	100	259	155	57	5	4						764
Remainder of Calcutta	341	380	534	329	118	50	36	15	9	1	6	6	1,831
All Calcutta	465	546	793	484	175	55	40	15	9	1	6	6	2,595

VII

Small pox cases reported during 1902

	January	February	March	April	May	June	July	August	September	October	November	December	TOTAL
Moochipura		1	4	2	4	1							11
Bow Bazar			1							1			3
Puddopukur		1	1	2									3
Taltollah			2	4		1	1		1			1	12
Entally				2		2							5
Campbell Hospital													6
TOTAL		2	8	10	4	4	1		1	2		1	33
Remainder of Calcutta	6	41	47	22	17	8	2	5	3	0	1	3	155
All Calcutta	6	43	55	32	21	12	3	5	4	2	1	4	188

VIII

Deaths registered from Small-pox by wards during each month of the year 1905

	January	February	March	April	May	June	July	August	September	October	November	December	TOTAL
Moochipara	2	1	6	3	2	3	2					4	23
Bow Bazar								1				1	1
Puddopukui		1	1				1	1		3	7	21	35
Taitollah				1								1	1
Entally			3	1								1	5
Campbell Hospital	1	.	5									1	7
TOTAL	3	2	15	5	2	3	3	2		3	7	27	72
Remainder of Calcutta	6	16	28	26	26	10	9	4	5	3	2	65	200
All Calcutta	9	18	43	31	28	13	12	6	5	6	9	92	272

IX

Table showing the annual incidence of cases from Small-pox in the Campbell Hospital and in area averaging one and a half miles around it with population, 1895—1905

AREAS	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	Area in acres	CENSUS OF 1901		CENSUS OF 1891	
													Number of houses occupied	Popula tion	Number of houses occupied	Popula tion.
Campbell Hospital	28	2	17	2	3	17	24	4	1	1	7	*	5 865	38,626	4,310	33,147
Entally	150	1	16		5	40	161	5			5		4 856	22,237	2,423	2 920
Taltollah	115		2		1	37	96	2	1	2	1	198	3,162	28,060	2,367	20,761
Puddopukur	136		4	2	4	21	80	2		1	95	166	2,983	27,052	1,550	22,668
Bow Bazar	100		2	1		20	89	2	1		1	147	8,987	64,116	4,318	40,472
Moochiparah	276	1	6	5	5	53	182	6	1	4	19	266				
TOTAL	805	4	47	10	18	188	632	21	4	8	68	777	25,853	1,90,091	14,968	1,28,968
Remainder of Calcutta	1,415	65	114	75	44	854	1,465	106	46	66	204	2,992	89,107	6,18 878	52,560	5,19,122
All Calcutta	2,220	69	161	85	62	1,042	2,097	127	50	74	272	3,769	1,14,960	8,08,969	67,528	6,48,090

* Acreage not available

X

Table showing the number of Small-pox patients treated in the Campbell Hospital during the years 1894—1906 and the relative incidence of the disease among protected and unprotected in those coming to Hospital

CLASS OF CASES TREATED	CASES MORE OR LESS PROTECTED											Total protected of all kinds	Total unprotected cases treated	GRAND TOTAL		
	Vaccination in							Total Vaccinated	Inoculated in		Total inoculated				Previous attacks of Small pox	
	1 point	2 points	3 points	4 points	5 points	6 points	10 points		1 point	2 points						
CONFLUENT— Showing good marks	3	12	1	8				24								
" faint "	16	10	1	14		1		42	1		1	2	25			
Total	19	22	2	22		1		66	1		1	2	69		957	1,026
SEMI CONFLUENT— Showing good marks	7	28	2	26				63	19	9	25		93			
" faint "	55	85	5	47		3	1	199	1		1	2	200		708	1,001
Total	62	113	10	73		3	1	262	20	9	26	2	293			
Carried over	81	135	12	95		4	1	328	21	9	31	4	362	1,665		2,027

X—Continued

CLASS OF CASES TREATED	CASES MORE OR LESS PROTECTED												Total protected of all kinds	Total unprotected cases treated	GRAND TOTAL
	Vaccination in							Total Vaccinated	Inoculated in		Total inoculated	Previous attacks of Small pox			
	1 point	2 points	3 points	4 points	5 points	6 points	10 points		1 point	2 points					
Brought forward	81	135	12	95		4	1	328	21	9	30	4	362	1,665	2,027
DISCRETE—															
Showing good marks	17	27	4	35				83	5	1	6	6	91	253	553
“ faint “	46	80	11	61		5		203	4		4		211		
Total	63	107	15	96		5		286	9	1	10	6	302		
MODIFIED—															
Showing good marks	2	17	1	23				43	3	1	4	6	49	22	168
“ faint “	15	49	6	22				92	1		1		97		
Total	17	66	7	45				135	4	1	5	6	146		
HÆMORRHAGIC—															
Showing good marks				2				2		1	1	}	3	97	112
“ faint “	3	6	1	1				11	1		1		12		
Total	3	6	1	3				13	1	1	2		15		
CORYMBOSE—															
Showing good marks		2						2				}	2	1	4
“ faint “				1				1					1		
Total		2		1				3					3		
GRAND TOTAL	164	316	35	240		9	1	765	35	12	47	16	828	2,038	2,864

XI

	Treated	Died	Death rate per cent
Confluent	1 020	623	60.72
Semi Confluent	1,001	311	31.06
Discrete	555	19	3.42
Modified	165	2	1.19
Hæmorrhagic	112	108	96.42
Corymbose	4		
Total	2,866	1,063	37.09

A PLEA FOR SCRAPS

"All knowledge is scrappy"—Berthelot

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I HAVE often heard men say the search for malarial parasites is unexciting, that, for a few cases in which the result is positive, there are many in which it is negative, and that the game therefore is a slow one. I have seen men so discouraged by this argument that they have practically given up microscope study, although well provided with apparatus and leisure.

The object of these notes is to try and show that there are closely related studies in hæmatology, which require a very moderate technique and yet afford quite a fascinating pastime, for although no doubt a well-stained film containing, say, segmenting malarial parasites is a thing of joy and beauty, so is a well-stained trypano-

some more easily obtained any day from the blood of the common frog.

Apart from the pleasure of studying any blood parasite in any animal, there is the advantage, moreover, that always comes from comparative pathology, and it is hardly necessary to illustrate this by the case of Ross's work on *Proteosoma*, and its bearing on malaria.

Collecting—I would first put in a plea for collecting. It is pretty certain that further advance in medicine must be associated with further knowledge of blood-sucking agents, such as mosquitoes, flies, fleas, ticks, bugs, lice, etc. Ross, in his very interesting malarial reminiscences, bitterly complained of the absence of knowledge of mosquitoes only 8 years ago, when he began groping about amongst the culicidæ making his own rough distinctions of genus, and species, involving much delay before the *Proteosoma* and malarial questions were solved. And even now, our knowledge of the geographical distribution of malaria carriers in India is very

incomplete. Nothing but patient collecting can give us reliable data.

I myself can say that collecting very easily can be made a pleasant and even fascinating hobby. Everybody knows the enthusiasm of the intelligent Collector. He is never in want of a pleasant occupation, whether he is at Headquarters or in camp, and the hot weather day for him ceases to be long and dreary. Useful helpers in this work can be found in Hospital Assistants and Vaccinators, for they very soon can be trained to spot species of mosquito in many instances, and to mount specimens.

Among the diseases in which mosquitoes are concerned are malaria, filaria, yellow fever, and Malta fever, and thus one understands the good sense of collecting all mosquitoes in our territories, and noting their seasonal prevalence. To illustrate what I mean, let me call to mind the case of malaria, which, in the Duns, is associated with *Myzomyia Listoni*, in the Punjab with *M. culicifacies*, in Central India (Jeypore) with *Pyretophorus Jeyporensis*, in Africa with *Myzomyia funesta*, in Europe with *Anopheles maculipennis*, and so on. Filarial disease is carried by *Culex fatigans* in India, Africa and America. It may, however, be spread by other species. Yellow fever is carried only by *Stegomyia fasciata*. It is curious that this mosquito is quite as common in India as it is in yellow fever countries, and yet it has not been sufficiently studied to enable one to say whether it is absolutely innocent or not.

Again, take the case of biting and sucking flies. Nagana, a disease of cattle in Africa, was the first disease to be shown to be carried by a biting fly—the tse-tse fly. Nagana, it may be remembered, is due to the presence of *trypanosoma brucei*, which is transmitted to another animal by *Glossina morsitans* chiefly. Sleeping sickness is due to *trypanosoma gambiense*, and is transmitted by *Glossina palpalis*. Possibly, it is transmitted by other species too, but this requires further enquiry. It is generally the case that such modes of transmission necessitate a qualified rather than a simple statement. Compare malaria. We first accused all anophelines of transmitting the disease, now we have come down to about a half dozen or so out of 100 species. For this reason it becomes a safe rule to clear the way first by carefully mapping out the distribution of the various species. It may be objected that in India we have no sleeping sickness, and therefore why trouble about *Glossina*? This is not a sound objection, as we have surra, and other trypanosome diseases, and although surra is so well known, I do not think it is yet settled how, exactly, it is transmitted. And, seeing the vast extension (under the lead of Schaudinn) of our knowledge relating to trypanosomes and spirochaetes, who can say that the biting flies of India are guiltless?

The ecto-parasites of animals harbouring trypanosomes should be carefully studied, e.g.,

those of the rat. Such lice, for example, are fairly easy to dissect, and material is plentiful. So plentiful, indeed, that it is very extraordinary that the mode of transmission here has not been clearly proved.

Take next the case of plague. Liston's researches prove it can be carried by a flea. We should, therefore, study the external and internal anatomy of fleas, and collect specimens, they are numerous enough. This, with a copy of the *Journal of Hygiene* for September 1906 (Plague Number), which gives a very excellent description of the anatomy of the insect, ought to provide many pleasant half hours for any medical officer. Similar remarks apply to the collection of ticks. "Tick fever" in Uganda is transmitted by this animal, so is "Texas fever." A good account of the anatomy and histology of ticks is given by Captain Christophers in No. 23 Scientific Memoirs (See also *Practical Study of Malaria, etc.*, Stephens and Christophers).

The mode of transmission of Kala-azar is not yet settled, and offers a favourable opportunity for study. Rogers suspects the bed-bug. Therefore, let us collect bed-bugs. Captain Patton has recently published a useful note on his collection of bed-bugs.

The following is a pleasant study for some of our confidères. Squirrels and house rats are very commonly infected by a parasite in the mononuclear leucocytes, easily seen in peripheral blood films. Both these animals have crowds of lice in their fur, besides other parasites. It is highly likely lice are the transmitters, in fact, Patton has gone deeply into the subject with regard to squirrels, but the rat leucocytozoon remains to be worked out.

Hints as to collecting can be had from Stephens and Christophers' book, and from a useful little book given away by the British Museum to intending collectors. The Indian Museum at Calcutta would also always help.

It should be remembered that it is important not only to mount the adult, but to study the characters of the egg, larva, and pupa, the breeding periods and places, and other points of life-history. Every specimen taken should be kept, even if there be many of one species. This gives one a good disciplinary view of the subject of variation, and is a wholesome check on species-making.

It might be remarked that with the easy methods of stained-film work at our disposal, we are apt to depend too much on dry specimens. It is, of course, often easier to diagnose malaria from a fixed film than from a fresh film, but the fresh specimen frequently gives more entertainment. It was thus that MacCullum came upon the process of impregnation in the case of *Halteridium*.

There are no more exciting events in hæmatology than watching the development of a crescent, or a phagocyte swallowing a flagellating body, or a sporozoite attacking a red corpuscle of

a frog, or pigment-dancing in *Halteridium* of the sparrow. As at certain periods almost every sparrow and frog, lizard, snake, and tortoise, has some kind of blood infection, the field of observation in this line of work is limitless, and no one can reasonably complain of lack of material.

Frog's blood—Frogs are generally found to harbour one or more parasites in their blood.

1 A hæmogregarine in the red cell, and two kinds of trypanosome

2 *Trypanosoma rotatorium*

3 *Trypanosoma mega*

Frogs are so common, and parasites so frequently met with, that here again is a pleasant field for work. One can, by study of wet and dry films, watch all stages of the hæmogregarine from the free sporozoite attacking the red cell to its escape from this. The mode of attack of the sporozoite is interesting and plainly visible, and recalls Schaudinn's representation of the malaria sporozoite attacking, a phenomenon which few have seen. It proceeds by a series of charges, until a hole apparently is made, and then it wiggles in, and immediately doubles up. Fig 19 represents a well-developed diepanidium free in the blood. Cannot some of our men follow it up from this point, where it has stuck fast for years?

Trypanosoma rotatorium is a slender trypanosome moving about in the same way as a rat trypanosome. In a dry film it is generally curved, and is seen to have a well-marked differently coloured area posteriorly, in which the blepharoplast lies (at the posterior end). Compare this area with Leishman's "flagellar area" in the Leishman body. This trypanosome is always motile, and its long axis is a straight line.

Trypanosoma mega is a most striking and interesting object, both in the fresh and stained film. It is peculiar in shape and may be likened to the flower of *Ipomœa*, whose edge is wavy, and at one point drawn out into a fine flagellum. Motility is peculiar. The creature rests the pointed or posterior end against a red blood corpuscle, while the membrane and flagellum undulate continuously, very like a flag in a moderate breeze. After a few moments the animal moves on, and settles on another red corpuscle, and so on. While attached to the corpuscle, the body is seen to be in a tremor, while the membrane wiggles actively to one side. The long axis is curved. The blepharoplast is recognizable in the living specimen. This attachment to a red corpuscle is curious (Fig 11), and can be seen also in stained films. Often the protoplasm near the spot of attachment is altered in staining properties. The trypanosomes of rats, horses, camels, etc., do not attach themselves in this way, but swim about actively in the plasma, scattering the red cells. This trypanosome does not scatter the red cells. The question arises, does the creature derive

nourishment from the red cell to which it is affixed?

The attachment certainly seems to do something, as the protoplasm in its immediate vicinity does not stain like the rest, in fact, takes no stain at all. If, however, it is feeding from the posterior end, what is the object of the frantic activity of the membrane and flagellum?

One can understand how in a thin fluid a flagellum is sufficient for locomotion, e.g., intestinal flagellates, how in the stomach of gnats where pressure is greater, a membrane begins to form to help the flagellum, e.g., *herpetomonas*, how in blood consisting of small red cells, an undulating membrane is developed, e.g., *T. lewisi*, and how, here, in the frog's blood, where the corpuscles are larger and heavier, the undulating membrane is strengthened by five or six ribs (Fig 13).

This *T. mega*, therefore, seems particularly adapted for movement amongst heavy corpuscles. It is thus difficult to see why it should be working its membrane and flagellum when, as seen in a moist film, fixed to a red cell. It might be that it is not worth while stopping its locomotor apparatus every now and then whilst feeding (the butterfly seems an exactly similar case), or perhaps, it has not the power of doing so. Possibly too, the vibratile action keeps the animal fixed to the red cell by preventing its being brushed aside. The ribs mentioned above come out very distinctly in stained specimens, and look like five or six blue tapering fingers coming off the palm, which would represent the body of the trypanosome. Often one can see a minute colourless bud near their free ends.

Immature forms are sometimes met with in the peripheral blood. Fig 12 shows one of an oval shape attached to a red cell, and having only a flagellum. Earlier oval forms, or spindles, without flagella are also met with. The life cycle does not seem to have been worked out.

Sparrow's blood—It is a very curious thing that at my station, at any rate, and at certain times of the year, every sparrow, practically, is infected with *Halteridium* or *Proteosoma*, or both, but most frequently with the former alone.

My observations are not yet sufficiently advanced to say certainly, but there seems to be a regular *Halteridium* season among sparrows, as malaria with us, and this is a point which should easily be settled by any one wanting something to do. I have not come across any trypanosomes in sparrows. A great deal of entertainment can be obtained from sparrow's blood, and one can easily follow *Halteridium* from a minute ring to the ookinete. It will, of course, be remembered that Schaudinn has worked out the life history of *Halteridium* in the owl, and has shown that it is but a stage in the development of a trypanosome in that animal. I endeavoured to feed larva-bred *Culex fatigans* on sparrows containing *Halteridium*. The work requires

a little arranging, for sparrows swallow up mosquitoes if they can. The birds were, therefore, night-capped. The stomachs of the mosquitoes were then examined. I did not come across any trypanosomes developing, but found some ookinets (Fig. 28) 12μ long, 14μ broad. Two chromatin masses, one large and one small, could be seen, and in a few cases, the smaller mass was shaped like a bar placed transversely, recalling at once the blepharoplast of *T. lewisi*.

In one dissection of a mosquito's stomach, which however was decomposing, I came across some interesting spirochaetes. They were probably accidental. When stained, they show many chromatin spots. They measure 12 to 20μ by 1μ and have about 6 to 8 bends.

In a few stomachs I came across minute spindle-shaped bodies with a dot of chromatin in the middle, generally arranged in couples end on 3μ long by 1μ .

Whether they were bacteria, or minute, almost invisible trypanosomes, as Schaudinn describes in the case of his *Halteridium*-trypanosomes, I have not sufficient material upon which to venture an opinion. I could not find anything peculiar in the salivary glands of the mosquitoes examined.

Many interesting globulating forms of *Hm* are seen in the heart blood, and the liver and spleen contain large quantities of pigment.

I have not come across the rosette of *Halteridium* figured in books, figs 15, 23 show the nearest thing to it in my slides, but here they are engulfed. Stephens and Christophers say "Segmenting forms and those corresponding to an asexual cycle, as in *Proteosoma*, are unknown"—page 320.

The nucleus of the parasite met with here is not in the centre of the halter, as figured in books. It is decidedly nearer one pole of the red cell. Anybody working at sparrow's blood will probably ask if the bird suffers at all from such a heavy blood infection. Apparently it does not, but it is difficult to say for certain, as the sparrow's temperature is easily affected by the slightest causes—manipulation even. For practical purposes, however, we might say it does not suffer much. But how is this to be explained? Have we a parallel case in malaria, where the presence of blood parasites causes no symptoms? It is known that children go about happily with many parasites in their blood. In this case, however, it is also known that though children show no obvious signs of distress, if they are carefully watched, there is noticeable a slight periodical weariness, and if the temperature is taken then, there is probably fever. So that this does not meet the case. But there is a circumstance which seems to connect the two cases. I think it is in the experience of most doctors that a person may harbour cresscents without showing any symptoms whatever. Now, cresscents represent the sexual stage of the para-

site. As to *Hm* infection, we have practically no knowledge of the asexual stage, what we ordinarily see represents the sexual stage only. Thus it would appear that the presence of purely sexual parasites of malaria and *Halteridium* is not very productive of symptoms. On the other hand, we know that in malaria the greatest suffering is associated with the presence of a large number of asexual spores.

Is it not possible that in the case of *Hm*, we do not see the birds which are suffering from asexual infection? Perhaps they die off in great numbers, or are too ill to be met with. At any rate, I think I have some evidence of spore formation in *Halteridium*.

Two years ago, in examining smears of internal organs of the sparrow, I came across in two birds some peculiar appearances, which pointed to a general infection by spores. The film was dotted over with multitudes of minute chromatin spots, sometimes scattered anyhow, sometimes in groups of six to 20 or 50, sometimes arranged in concentric rings. They immediately reminded one of Leishman bodies. In fact, they resemble Leishman bodies in many respects, but there is never a micronucleus. They may be loose in the "matrix" or enclosed in a macrophage, they are oval, or round, or pear-shaped, or boat-shaped, they seem to have a well-marked cuticle, which stains blue by the Romanowsky method, and often one view shows a curved facet, the nucleus is round, or curved, or half-moon or quarter-moon shaped, situated mostly at one side.

Dimensions, about 2μ in diameter. A very few have been seen reaching a larger size, and one measured 6.6μ by 3.3μ .

These bodies are found in the spleen, liver, marrow, and heart blood—fig. 20. I have not yet had an opportunity of examining them in sections or in citrate. In the heart blood, they are met with in large mononuclear cells, taking up the place of the cytoplasm.

Fig. 21 shows a cell (found in a spleen smear), occupied by spores and pigment peculiarly arranged. It is probably a red cell, but the only one so occupied which I have been able to find in a very long search. But it is most interesting as possibly furnishing a key to the question what is the nature of these spore-like bodies.

In the two birds examined, *Halteridium* is very scarce, and there is practically no *Proteosoma*. Many post-mortems of birds heavily infected with *Hm* showed no such spores, but had pigment in internal organs. In the two cases described there was no pigment to speak of. Eosinophiles were very numerous in these, but not in *Hm* or *Pro*. It is probably neither of these diseases.

Figs 14–18 are from another sparrow. The only parasite visible is *Hm*. On 14th March 1906, the peripheral blood showed heaps of young *Hm*. (one ring particularly looking very clear—

fig 14), and a phagocyte containing a group of spores

On 26th March 1906, the sparrow was killed, and smears made of internal organs. Good specimens of *Hm* were seen, of many stages, some free, some globulating, some flattened, some ripening

Some mononuclears were seen containing spores (in the heart blood and lung). These spores, which were in various stages of digestion, but never more than about 8 or 9 in number, in many cases bore a strong resemblance to the young ring shown above in fig 14. One ripening form measured 9.3μ by 5.3μ .

Another sparrow gave similar specimens

It is quite possible these appearances are produced by the asexual phase of *Hm*, and that the *Hm* sporocyst receives no favour from the phagocytes

In connection with sparrow's blood, I would mention a rather curious appearance I came across, which puzzled a good many. In smears of organs, I saw minute curved rods, fig 55 (small), and groups of long flagellated objects, 50 or 60 closely packed together to form plaits, fig 55. A group of this kind is one of the most beautiful things to be seen under the microscope, stained by Romanowsky's method, for the objects lie parallel and closely packed—the heads all together, and the flagella all together, and long enough to stretch across the field of the $\frac{1}{2}$ -th. Here was a new flagellate! It was nothing of the kind. It was spermatozoa! They probably got in by accident in making the dissection, for, as everybody perhaps knows, the vas is a very fine delicate tube in close relation to the spleen and kidney, and may easily be nicked in a rapid dissection.

Rat's blood.—The most interesting thing, of course, is *Trypanosoma lewisi*. More than half the rats in this town harbour it, without showing any marked symptoms. Most of the shapes found are represented by the well-known illustration of this trypanosome—long and slender, fig 40. In some cases met with here I have come across other shapes, namely, a small plump trypanosome, fig 41, a very fat one, fig 39, and thirdly, a series of immature forms, figs 30–34. These are very rarely seen, but most interesting. The ordinary long known process of multiplication is by long division, the immature forms figured here are probably the sexual forms.

These immature forms are very small, they may be pear-shaped, or oval, or round, they are flagellated, and are found singly, or in pairs, or in batches of 6, 8, or 10.

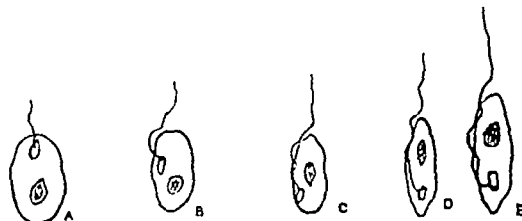
The similarity to the Leishman body is very striking.

It is also noticeable that the micronucleus is in the flagellar area, and the flagellum comes off from the anterior quarter of the area.

Note now the fat variety—the width of the body much greater than in the ordinary trypanosome, the flagellar area still in many cases well

marked, the flagellum coming away from the posterior side of it (viewing the trypanosome), the flagellum coursing along the side of the body towards the other end.

The accepted process is, that, in developing, the micronucleus and flagellum travel backwards, past the nucleus, so as to take up a posterior position. If this is the case, how should we explain the situation of the micronucleus being posterior in the flagellar area of the adult? Should it not be anterior?



A B C Show journey of blepharoplast backwards
E Ordinary appearance of adult

It may be that the flagellar area describes a circle, with its centre in the centre of the cell, this would produce the *e* view. I have not seen any specimen in such an intermediate stage as to show this to be the case.

The moving backwards of the blepharoplast is seen in its intermediate stages in the small plump variety, but not in the fat variety.

Examining several of the primitive forms, figs 32, 33, 34, 37, one notices that the flagellum generally shows a tendency (recognizable at a very early stage) to course down the side of the body, and then end in its free tip. Fig 37 might be the result of breaking up of a mass like fig 34, and about to become two trypanosomes of the 'fat' kind, and thus we should get out fig 39. That is, anterior becomes posterior.

There seem to be 3 types of trypanosome, the long slender, forming the vast majority, fig 40, the 'fat' broad, fig 39, and the small, fig 41. The last two form a very small fraction of the total seen in peripheral blood. The specimens seem to show 3 routes of development—(1) longitudinal division, often seen in peripheral blood (asexual), (2) by the process represented by figs 30 to 44, and (3) by the process represented by figs 43, 44, 46 (sexual probably).

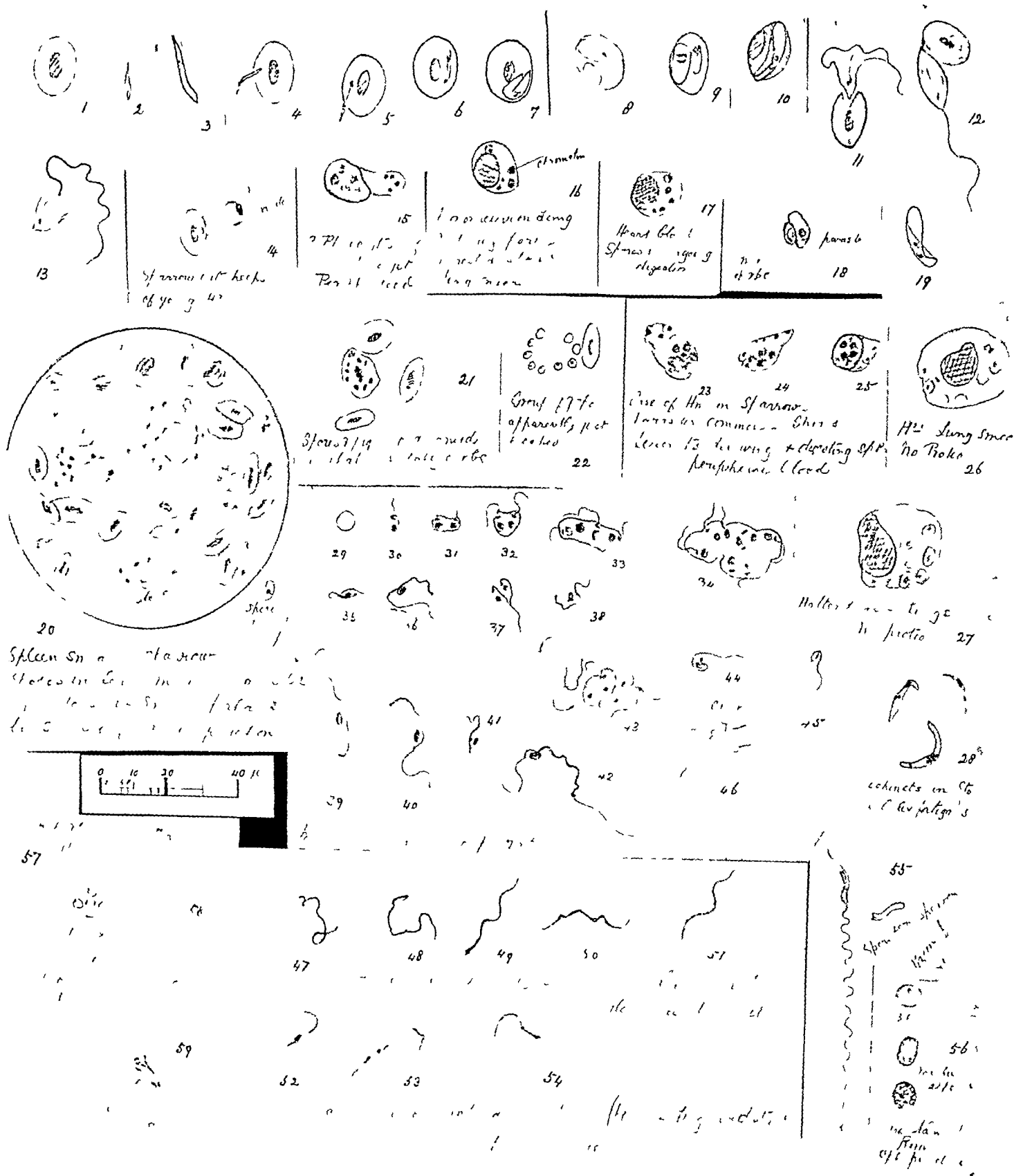
The bodies represented by fig 34 seem to give rise to the fat broad variety in figs 38, 39, the tangle, fig 43, is met with in heart blood and in citrate, and from it one can see the ordinary long trypanosome wiggling away. The specimens do not show the route taken by the small variety. They would appear to take a short cut from fig 30 to fig 41.

This would dispose of the difficulty alluded to above, of the precise position of the micronucleus in the flagellar area. It might be noticed that if the Leishman flagellate could do this, the result would be very like a trypanosome.

These immature forms in the peripheral blood have not been often met with, but Capt

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Greig has kindly informed me he has, in his work on sleeping sickness, found them in the stomach of *Glossina*.

One of the rats harbouring them was killed on 14th February 1906, and smears examined. In the spleen, trypanosomes were found in and near the blood vessels, but the splenic pulp seemed free. Trypanosomes were common in the liver and kidney. None were found in the marrow. In the heart smear, clusters of developing trypanosomes were found, the appearance being a bluish stained foundation or "matrix," and a great tangled collection of macronuclei, micronuclei, and flagella.

A portion of blood was, with proper precautions, placed in a citrate tube and kept at room temperature. Living trypanosomes were observed for 23 days. There was no bacterial contamination, although a stained film and a moist film were examined almost every day. The points noted were—trypanosomes in varying degrees of activity, a good many curled-up young forms, slow movements after 5th day, violent lashing disappearing, clusters of small nuclei on blue ground work, about 6th day posterior ends began to get knobbed or clubbed, on globular, 8th day, activity increased, fresh swarms developed, tangles watched—forms wiggling to be free from thick mass of nuclei and threads, movements getting slack again, Leishman body-like forms never met with, longitudinal division not met with. Movements ceased 23rd day.

Fig 42 represents a trypanosome occasionally met with in rat's blood along with the ordinary trypanosomes, it has a very long posterior process. It corresponds closely to the new species described by Lingard, as *T. Longocaudense*.

FLAGELLATES IN MOSQUITO'S STOMACH

Figs 47—51 represent organisms met with in dissecting a culex on 5th March 1905. The whole stomach was crammed with a seething mass of these wiggling flagellates. The mosquito was captured on my window. It will be seen that one or more dots of chromatin represent nucleus, the flagellum always comes off from a chromatin dot well stained, there is a distinct but delicate undulating membrane, and a well-stained long flagellum.

On 12th April 1905, I came across another mosquito with flagellates in the stomach, all writhing furiously in the fully stocked stomach. They are somewhat different from the first lot, in that the flagellum takes on the appearance of a whip, and is not the well-stained cord one sees in trypanosomes. There are generally two or three smudges of chromatin representing nucleus, but the blepharoplast is not distinct. There is a very delicate undulating membrane.

Chritidia and *Herpetomonas* are the things generally found in such situations. These objects seem too big for *Chritidia*, but the second

lot seem to correspond to *Herpetomonas*, except that there is a distinct membrane. In the first group, fig 50 is very suggestive of a trypanosome. The movements in all were very like those of trypanosomes. I have not seen any description to exactly fit them.

Chatterji of Calcutta has described a trypanosome in the same situation, but I have not access to his figure.

Fig 59 represents a *leucocytozoon* found over a year ago here in the peripheral blood of a rat. I have described it in the *Journal of Tropical Medicine* of 1st November 1906.

A similar parasite (that first described by Patton) is very common in the squirrel of this part of the country. In one specimen no mononuclear escaped infection.

Fig 58 represents a red corpuscle containing five malarial parasites. It was a case of Tertian.

Fig 57 shows an appearance of a red corpuscle occasionally met with in rat's blood. 8, 10, 12, or 15 minute bacillus-like rods are found in the red cell, which, in other respects, looks normal. Sometimes the rods are arranged in a sort of circle. Once I saw a few free in the plasma. They look something like pigment in colour. Balfour of Khartoum describes similar appearances in the jerboa, and mentions their appearance also in moles.

I would here add a note on *Anophelines*. In a paper on mosquitos and malaria in Ferozepore, in the *Indian Medical Gazette*, January 1905, I enumerated ten species of the *Anophelina*. I have to add an eleventh. This was a single specimen of *Myzorhynchus nigerimus*, bred out from a larva taken from the dhoby canal on March 23rd, 1905. In this water *N. fuliginosus* is very common. This makes eleven species of *Anophelina* found in this district.

Fourteen spleen punctures have been made in the hope of getting Leishman bodies, but the results have been negative. Often the spleen was felt (through the abdominal wall) to be of the correct bacony consistence. In one case, peculiar looking lilac-stained (Romanowsky's process) objects were seen. These either showed no apparent structure, or looked mulberry-like, one seemed to be a couple of minute spores in a fine network, fig 56.

To sum up, then, here are a few things to amuse oneself with in the long days of the hot weather. They are all ready to hand, and require very little outfit.

Collect culicidæ, biting and sucking flies, fleas, bugs, lice ticks. Hunt in their stomachs for parasitic forms, e.g., flagellates, etc., work out the life-cycle and infection-cycle of *drepanidium* and trypanosomes in frogs, sparrow's *halteridium*, trypanosomes and leucocytozoa of rats, *surra*.

EXPLANATION OF FIGURES

- 1—13 Peripheral blood of common frog
- 1 Normal r b c
- 2 Sporozoite-free in plasma
- 3 Enlarged

- 4, 5 Entering *lbc*
 6, 7, 8, 9, 10 Growth in *lbc* Note membrane appearance in concavity of 10 19 Fies form
 11 Protoplasm of *lbc* affected by attachment of T mega
 13 Adult T mega
 12 Immature T mega
 14 to 18 from one sparrow 14 Periph blood—showed heaps of young Hm—very young parasite 15 Periph blood, phagocytosis of sporocyst 16 Lung smear showing mono nuclear and partly digested spores 17 Heart blood, ditto 18 Lung smear, parasite newly fies
 20, 21, 22 Smears of spleen, heart Periph blood showed some Hm, very few proteo, and very many eosinophiles. Smears of internal organs crammed with spores. Marrow ditto
 23, 24, 25 Periph blood sparrow—Hm
 26, 27 Lung smear of sparrow with Hm No proteo
 28 Ookinets, stomach of *Culex fat*, fed on sparrow with Hm
 29 Normal *lbc* rat (smaller than human)
 30—34 Immature trypanosomes in periph blood (very rare)
 35 Not yet adult 36 Nearly adult 37 Two nearly adult 38 Adult 'fat' variety
 39, 40, 41 Types of tryps, met with in periph blood, 'fat,' ordinary, small varieties
 42 Tryp with uncommonly long posterior process (Of Linguid's *T. longicaudense*) found occasionally with *T. levisi*
 43 From citrate preparation—a tangle of flagella, nuclei, and blepharoplasts
 44 Developing form from citrate
 45 Dying form in citrate clubbing of posterior end
 46 Tryps freeing themselves by wriggling away from the tangle Citrate prep 10th day
 47—51 Flagellates found in mosquito's stomach 5th March 1905 Flagellum stains well 50 Shows two well marked chrom spots U M present
 52—54 Flagellates in stomach of mosquito (*C fat*) 12th April 1905—more like *Leishmaniasis* Flagm does not stain well U M present
 55 Spermatozoon of sparrow
 56 Lilac stained bodies, some mulberry like, in spleen puncture of a woman age 50 Hard, very large, briony spleen, no fever, 6 years growth
 57 Rat's blood Peculiar rods in a few *lbc* Occasionally met with (Of Balfour's granular leishmania and Graham Smith)
 58 Human Tertian
 59 Leucocytozoon in house rat, Punjab
 The figures are hand drawn, and then photographed

THE FLEA-KILLING POWER OF VARIOUS CHEMICALS *

By R D SAIGOL,

CAPT, I M S,

Rangoon

The following is a report on experiments carried out with a view to ascertain the flea killing power of various chemicals with special reference to disinfection of plague infected houses

The following is the method adopted—

1 Collection of fleas Rat fleas were obtained by lightly chloroforming rats and collecting the fleas in test tubes. Owing to a paucity of rat fleas, latterly dog fleas (which were collected without chloroform) were used instead. The two fleas behaved almost identically

2 Mode of application of the chemical

A *Immersion*—In the case of solutions or emulsions in water, the fluid in question was poured on the fleas in a test tube and all the fleas shaken down below the surface. The duration of movement to the naked eye was noted in cases where the fluid was not too opaque. The contents of the tube were then poured on a filter paper, and the fluid drained off, leaving the

fleas on the same filter paper. The total time of immersion, both in test tube and on filter paper till the fluid was finally and completely drained off, was noted. Except in a very few cases, the fleas were not washed with water, but drying was helped by placing the wet filter paper on a second dry filter

B *Fumigation*—Sulphur fumes were passed down a test tube containing fleas, or fleas were afterwards dropped into it. Beyond describing the haziness produced by the fumes, I am unable to give the percentage of SO_2 found efficacious. Pictonine gas was similarly employed

In a second series of experiments steam was employed in conjunction with sulphur fumes

Petrol, benzine and formaline fumes were employed by dropping the pure chemical on a filter paper under a glass cover. The fleas were then dropped on the filter paper and observed under the glass cover

C In the case of crude petroleum and astackie, the material was smeared on boards, and the effect on fleas was watched under a glass cover

Of the two tables appended, No I gives most of the experiments performed, and No II is an abstract of all the experiments, and gives aggregate results showing the total number of fleas experimented upon, with the number of recoveries, percentage of recoveries for purposes of comparison, and cost of making up 500 gallons of solution or emulsion of some of the important chemicals

SUMMARY

As will be seen from Table No I, various chemicals have been tried on fleas. Some of these, which proved absolutely useless as flea killers, can be summarily dismissed without any further comment. These are perchloride of mercury, permanganate of potash, pictonine gas, formaline, bach (sweet flag), quassia, tampobo, tar, lime, washing soda, sulphuric acid, astackie (which is crude petroleum from which the inflammable volatile oils have been separated)

That some of these substances are probably objectionable to fleas, and therefore on application are successful in freeing animals or houses of these pests, I do not propose to dispute, but the object of these experiments has been to discover, if possible, some substance that would kill rather than expel fleas. In this connection, therefore, the difference between a "flea fuge," i.e., one that expels them and a "pulicide," i.e., one that kills them, should be clearly borne in mind, and the possibility of fleas being expelled and not actually killed should not be lost sight of

Last year in trying to rid my dog of fleas I was much struck by the results obtained with phenyle as compared with cyllin or 121, but I had no facilities in the way for a laboratory to try these any further in a scientific way. This has now been done and the results given in Tables I and II from which it appears that phenyle is the best of the three, 112, cyllin, phenyle and 121, but requires at least 60 seconds to kill fleas. I have tried many other substances, and of these only the following deserve to be mentioned—

1 Crude oil, crude petroleum or earth oil. This is a thick oily fluid largely used in Burma as an application to the wooden structure of houses to preserve the wood against white ants and rain. Crude oil emulsion with soft soap has, I believe, been found very successful for killing fleas at Bombay and elsewhere, but I must confess that I myself have not found it nearly so successful. The emulsion obtained by soft soap is not perfect as a substantial scum separates on the addition of water which cannot be satisfactorily applied to a house. Besides it is a very expensive stuff to use. The pure oil is much more efficacious as shown by my "smearing" experiments, owing, I believe, partly to a mechanical action and partly to the petrol contained in it. But an application of pure crude petroleum to the interior of houses can hardly be recommended on account of, firstly, its oily nature, and secondly, the great

* Sent by Col W G. King, C.I.E., I.M.S., for publication—Ed, I.M.G.]

labour and time that would be necessary for its thorough application, and even then it is doubtful if it could be applied to cracks and crevices so thoroughly as a fluid by means of Chinese pumps or scoops could. Hence, I tried to emulsify crude petroleum in various other ways, and succeeded in getting a better and more perfect emulsion with phenyle and cyllin. Izal does not mix with it. In test tube experiments, the results obtained by these, though fairly good, were yet found to be inferior to petrol emulsion.

Of the various combinations, the 1, 2, 3 mixture deserves special mention, but I defer this for the present, as it will be more suitable to speak about it in connection with my "box" experiments.

2 Sulphur fumes were extremely successful. In a test-tube, where the fleas could be kept in a closed space, it was possible to kill them in from 30 to 40 seconds with dry fumes. When steam was employed in conjunction with $S O_2$, the fleas took 80 seconds to die, i.e., double the time taken by dry $S O_2$ fumes alone, showing the death of fleas is brought about by asphyxiation. As the practical value of $S O_2$ will largely depend on the nature of houses to be disinfected, the actual utility in the case of Burmese houses can only be determined by actual experimentation. The results of sulphur fumigation in conjunction with the ordinary perchloride of mercury disinfection, do not seem to have been very successful.

3 Of the various infusions tried, tobacco is the only one that deserves any mention. In fairly strong infusion ($\frac{1}{2}$ oz tobacco leaves to 12 oz water or about 40 lbs to 250 gallons of water), it killed fleas in about 30 seconds.

4 Petrol and heavy benzine obtained from crude petroleum were next tried by me. In pure form the mere contact proved immediately fatal to fleas, and as fumes also gave good results, killing fleas in about one minute. Although found so efficacious as flea killers, yet owing to their highly inflammable nature, it was obvious they could not be used as such for houses. Consequently I tried to emulsify them, and as with crude petroleum, found cyllin and phenyle the best for this purpose. No separation of oily particles takes place on the addition of water, and there is no objectionable odour about it. Petrol and benzine with cyllin or phenyle (in equal quantities) made up to 1 in 800, i.e., 1 in 1600 of both were found to kill fleas successfully.

In order to test their efficacy somewhat further, experiments on washing dogs with the different chemicals were carried out, and these showed that most of them, though capable of killing fleas in test tubes, only drove them away when applied to dogs, and the few that acted as flea-killers acted much more slowly than when applied to fleas in a test tube.

Next, a series of "box" experiments were carried out. To imitate as nearly as possible conditions prevailing in Burmese wooden houses, I have tried the effect of petrol and benzine emulsions and also the 1, 2, 3 mixture on fleas let loose in a deal-wood packing case. A large number of fleas was dropped in, and the emulsion was finely sprayed all over the sides and bottom by means of a brass syringe. Petrol and benzine emulsions with cyllin (1 in 200, i.e., 1,400 of each) were employed. Nearly all the fleas that came in contact with the fluid died while a few were noticed crawling up the sides, but were dead by the time they had travelled one foot or so. Five minutes afterwards, when the fluid had completely drained off the sides, leaving just a wet surface, fresh fleas were dropped on the sides. These did not seem to like their surroundings at all, and were noticed to make vigorous efforts to get out. Some in trying to jump off fell on to the bottom, and coming in contact there with the fluid died, others tried to crawl out of the box. Three of these fleas (which did not actually come in contact with the fluid), after being allowed to wander about for about 10 minutes were removed in a test tube and observed, but were still alive and active at the end of one hour.

Actual contact with the fluid is therefore necessary to kill fleas, although the free use of the emulsion in a house is possibly enough to drive out those that escape actual contact. Female fleas are more resistant than male fleas.

The 1, 2, 3 mixture, when tried in this way, gave very satisfactory results. Owing to its thicker consistency, the emulsion sticks to the walls much better, and hence takes much longer to dry up or trickle down, and is therefore capable of exerting its action on fleas on a wall for a comparatively long time.

Petrol, benzine and crude petroleum (1, 2, 3 mixture) emulsions were also sprayed on a matchbox, when silver fish, spiders, ants and similar pests were observed to come out and die almost at once. Some fleas were next dropped on the wet walling and subjected to a spray. One of these stuck to the wall and died, and the two others in trying to jump off fell on to the bottom, and coming in contact with some more fluid, died. It is my belief, therefore, that fleas present on walls, on coming in contact with the emulsion are either killed straight off, or in trying to jump off lose footing and fall on to the floor, hence it appears advisable that in commencing disinfection of a house, before any furniture is either disturbed or removed, a liberal amount of the emulsion should be present on the floor to catch and kill all fleas that might fall down.

A few words as to the best way of making these emulsions will not be out of place. Both cyllin and phenyle emulsify petrol, but the use of cyllin is decidedly preferable owing to its greater germicidal powers. So far I have not had the time to test whether the germicidal power of cyllin, when combined with petrol or benzine, is in any way altered, but experiments are now being conducted, and the results will be reported in due course. Petrol and benzine emulsions must be made fresh before use, as by keeping the flea-killing power of these emulsions is weakened owing to the volatile nature of petrol and benzine, as is evident from my experiments in which 24 hours old emulsions were employed. The emulsion is best made by first thoroughly mixing cyllin (or phenyle) with the required quantity (which should never be more than equal) of petrol (or benzine), then gradually adding water little by little and vigorously shaking after each addition till the two appear thoroughly and uniformly mixed (at this stage there is a tendency to slight gas formation or liberation, hence the stopper should be lightly put in). This can then be diluted to the desired strength. Petrol and benzine can also be emulsified by soft soap, but the method is tedious and requires more time and money.

The 1, 2, 3 mixture is also made by taking the chemicals in the above proportions, and then gradually adding water to the desired extent in the manner above stated. A slight scum separates, which can either be removed or used as desired.

Petrol and benzine both act equally well, and I have not been able to discover any difference in their action on fleas. I have poured these emulsions up to a strength of 1 in 200 on wood and mats, but have failed to increase their inflammability by such applications.

A disinfectant to be of any use must not only be capable of killing fleas, but also capable of dealing satisfactorily with all the plague bacilli that might be hanging about an infected house. It must be cheap and such that it could be used without much trouble or skill, and above all must have no unpleasant odour or colour, so that the people might not object, but willingly allow its free use in their houses.

The above gives the results of laboratory experiments only, and can merely serve to indicate the lines along which more practical experiments might with advantage be undertaken in order to decide the chemical that would be most useful for the disinfection of plague-infected houses, bearing in mind that the destruction of plague bacilli is as important as the killing of fleas.

TABLE, No I

Chemical	Strength	Mode of application	Time when movement ceased	Duration of treatment	Fleas	Fleas recovered	REMARKS
Mercury Perchloride	1 1000	Immerision	60"	120"	5	5	Jumped off almost at once
Do	1 1000	Do	45"	60"	5	5	Do
Sulphuric Acid	1 250	Do	60'	60"	5	5	Has no effect at all
Do	1 250	Do	60"	4"	2	2	
Do	1 100	Do	45"	60"	5	5	
Lime water	Saturated	Do	30"	60"	6	6	Become insensible and take a few minutes to recover
Do	Do	Do	35"	120"	5	5	Do
Potassium Permanganate of Potash	1 100	Do	10"	60"	5	5	Recovered almost at once
Washing soda	Saturated	Do	40"	60"	5	5	Has no effect at all
Bach—"Sweet flag"	Strong Infn	Do	40"	60"	5	5	Has no killing power
Do	Do	Do	45"	120"	4	4	
Quassia Infn	B P	Do	45"	70"	7	7	Has no effect at all
Do	Do	Do	40"	13'	5	5	
Do	Do	Do	45"	2	5	5	
Tambopo (Leucis Cephalotes)	Juice	Do	'	45	5	5	Insensible for a short time, but recovered
Do do	Juice plus water	Do	'	55	5	5	
Tobacco Infusion	Fairly strong	Do	20"	45'	5	0	About 1/2 ounce leaves to 12 ounces of water
Do	Do	Do	20"	10	5	0	
Do	Do	Do	20"	20	5	3	
Sulphur fumes (SO ₂)	To haziness	Dry in test tubes as fumes	60"	60	10	10	There was apparently some mistake about this
Do	Do	Do	60"	120	7	1	
Do	Do	Do	45"	60	5	4	
Do	Do	Do	40'	60'	5	0	
Do	Do	Do	45"	60	5	0	
Do	Do	Do	45"	60'	5	0	
Do	Do	Do	40"	40'	5	0	
Do	Do	Do	35"	35'	5	0	
Do	Do	Do	30"	30'	5	0	
Tar plus H ₂ SO ₄ —Pictonine gas	5 SO plus 1 air	Do		1 hour	4	4	
Slaked Lime	White washing	Applied to a board			5	5	Has slight action—become less active—washed after 3 and recovered
Do	Dry powder	Spread on a board			5	5	Movement slightly impeded on account of powder but recovered
Izal	1 100	Immerision	30"	50"	5	3	One jumped off at once
Do	1 100	Do	35"	60"	7	0	Feeble movement in all, but died eventually
Do	1 100	Do	30'	60"	5	1	
Do	1 200	Do	40"	60"	6	5	
Do	1 200	Do	50"	60"	5	4	
Do	1 400	Do	30"	60"	5	5	
Cyllin	1 100	Do	27"	60"	5	0	
Do	1 200	Do	30"	70"	5	1	
Do	1 250	Do	30"	60"	5	5	
Phenyle	1 100	Do	50"	60'	5	0	
Do	1 100	Do	'	30"	5	0	
Do	1 200	Do	30"	60'	5	0	Movement in 1, but died eventually
Do	1 400	Do	60"	60'	5	0	Movement in 3, but died soon after
Do	1 400	Do	60"	60'	5	0	Movement in all, but died eventually
Do	1 500	Do	55"	55'	6	4	
Cyllin plus Phenyle 1 1	1 100	Do	25"	40"	5	2	
Do do	1 100	Do		60"	4	1	
Do do	1 100	Do	30"	45"	5	2	
Do do	1 100	Do	15"	60"	4	2	
Cyllin 1% plus tobacco infusion 1 1	Cyllin 1 1	Do					
Do do	1 200	Do	20'	60"	5	0	
Do do	1 200	Do	15"	60"	4	0	
Do do	1 200	Do	30"	30"	5	1	
Do do	250	Do					
Phenyle plus Astackie 1 1	1 100	Do	40"	40"	4	3	
Do do	1 200	Do	50"	50"	4	4	

TABLE No I —(Continued)

Chemical	Strength	Mode of appli- cation	Time when move- ment ceased	Duration of treatment	Fleas	Fleas recovered	REMARKS
Phenyle plus tar 1 1 (Filtrate)	1 100	Immersion	'	25"	5	5	Tar is unsuitable and cannot be utilized
Cyllin plus tar 1 1 (Filtrate)	1 100	Do	20'	30'	5	4	
Earth oil or crude petroleum	Pure	Smear'd on board	3'	3'	4	0	
Do do	Do	Do	3'	3'	4	0	Has only a slight mechanical action
Astackie	Do	Do	5'	5'	5	5	
Phenyle and crude oil 1 1	1 100	Immersion	20"	20"	10	1	
Do	1 100	Do	30"	30"	9	2	Movement in 6, but died in 3 minutes
Do	1 100	Do	30'	60"	4	0	
Do	1 100	Do	25"	40"	5	0	
Do	1 100	Do		60"	5	0	
Do	1 100	Do	20"	40"	5	3	
Do	1 200	Do	20"	20"	5	1	
Do	1 200	Do			5	0	
Do	1 200	Do		35"	5	1	
Do	1 200	Do		60"	5	0	
Cyllin & Phenyle & Crude oil 1 1 2	1 100	Do		55"	6	1	3 crippled and died eventually
Do	1 100	Do		45"	6	0	
Do	1 100	Do					
Do	1 100	Do		20"	5	3	
Do	1 100	Do		30"	5	2	
Do	1 100	Do		20"	5	4	
Do	1 100	Do		30"	5	3	
Do	1 100	Do		35"	3	0	
Do	1 100	Do		60"	6	0	
Crude oil emulsion with soft soap	1 100	Do		60"	5	0	
Do	3 100	Do	35"	60'	4	2	
Do	10 100	Do	20'	60"	6	2	
Petrol	Pure	Do		5"	5	0	2 crippled 1 crippled and took 10 minutes to die
Benzine (heavy)	Pure	Do					Death instantaneous
Phenyle and Petrol 1 1	1 200	Do	20'	5"	5	0	Ditto Feeble movement in 2, but died eventually
Do	1 200	Do	15"	30"	5	0	
Do	1 400	Do	20"	10"	6	0	
Do	1 800	Do	30'	50"	4	0	
Do	1 1600	Do	40"	50'	5	1	
Do	1 3200	Do	35"	60'	5	5	
Tap water (control)							Insensible for about 2 minutes, then jumped off
Phenyle & Benzine 1 1	1 200	Do	50"	75"	5	5	Recovered at once
Do	1 400	Do	15'	30'	4	0	
Do	1 800	Do	20"	40"	4	0	
Do	1 1600	Do	30'	50"	5	0	
Cyllin and Petrol 1 1	1 200	Immersion	30"	50"	5	0	1 crippled, but died shortly afterwards
Do	1 250		10"	40"	4	0	
Do	1 200		20"	50"	5	0	
Do	1 400	Do	30'	40"	5	1	Emulsion 24 hours old
Do	1 400	Do	40"	60"	5	0	
Do	1 400	Do	20'	40"	5	1	
Do	1 400	Do	25"	30"	6	0	Do Feeble movement in one for some time
Do	1 800	Do	30'	55"	5	0	
Do	1 1600	Do	45"	60"	5	3	
Do	1 2000	Do	25"	60"	6	6	Took 3 minutes to recover
Cyllin and Benzine 1 1	1 3200	Do	25"	60"	6	5	
Do	1 200	Do	25"	60"	5	5	
Do	1 400	Do	15"	30'	5	6	
Cyllin and Kerosene oil 1 1	1 400	Do	20'	45"	5	0	
Do	1 200	Do	25"	40"	5	0	
Do	1 400	Do	30'	40"	5	0	
Formalin	Pure	Do	30"	55"	5	1	
Do	1 40	Fumes on fil- ter paper	2	2	4	0	
Do		Immersion	60"	70	5	5	

* Unless otherwise stated fresh emulsion was always used

TABLE No II

Chemical	Strength	Mode of application	Time when movement ceased	Duration of treatment	Total No of fleas	Total fleas recovered	Percentage recoveries	Cost per 500 gallons of solution	REMARKS
								Rs A P	
Mercury Perchloride	1 1000	Immerision	50"	60"	10	10	100%	15 10 0	
Sulphuric acid	1 250	Do	1'	4'	7	7	100%		
Do	1 100	Do	30"	60"	5	5	100%		
Lime water	Satd soln	Do	30"	60"	6	6	100%		
Potassium Permanganate of Potash	1 100	Do	40"	60"	5	5	100%		
Washing soda	Satd soln	Do	40"	60"	5	5	100%		
Bach (sweet flag)	Strong Infu	Do	45"	120"	9	9	100%		
Quassia Infusion	B P	Do	45"	60-120"	17	17	100%		
Tambopo	Juice	Do		45"	5	5	100%		
Do	Juice and water	Do		55"	5	5	100%		
Tobacco Infusion	Highly strong	Do	20'	10-45"	15	3	20%		
Sulphur fumes (SO ₂)	To haziness	Dry fumes	40"	60"	79	15	19%		Through some error 10 out of 10 recovered in one experiment Leaving this out only 5 recovered out of 69, or 7%.
Pictoning gas (Lat & H ₂ SO ₄)		Do		1 hr	4	4	100%	20 0 0	
Izal	1 100	Immerision	35"	60"	37	14	38%	10 0 0	
Do	1 200	Do	40"	60"	27	21	77%	5 0 0	
Do	1 400	Do	40"	60"	5	5	100%	25 0 0	
Do	1 100	Do	25"	60"	5	0	0%	12 5 0	
Cyllin	1 200	Do	30"	70"	5	1	20%	10 0 0	
Do	1 250	Do	30"	60"	5	5	100%	11 4 0	
Do	1 100	Do	30"	30"	20	0	0%		
Phenyle	1 100	Do	30"	60"	11	0	0%	5 10 0	
Do	1 100	Do	30"	30"	22	20	91%		
Do	1 200	Do	30"	60"	10	2	20%	2 13 0	
Do	1 200	Do	30"	30"	8	8	100%		
Do	1 100	Do	60"	60"	10	1	10%	1 7 0	
Do	1 800	Do	55"	60"	6	4	67%	17 2 0	
Cyllin and Phenyle 1 1	1 100	Do		40"	10	5	50%		
Do	1 100	Do		45-60'	9	3	33%		
Cyllin 1% & Tobacco Infusion 1 1	1 200	Do	19"	50-60"	22	4	18%	11 4 0	In these experiments the strength of tobacco was the same—only Cyllin varying
Do	1 250	Do	30"	30"	5	1	20%		
Crude petroleum	Pure	Lightly smeared	10'	31'	15	0	0%	12 5 0 0	
Do	do	Farly smeared	3	3	8	0	0%		
Phenyle & Crude oil 1 1	1 100	Immerision	25"	20-40"	73	24	33%	6 4 0	
Do	1 100	Do		60"	25	0	0%	3 2 0	
Do	1 200	Do		35'	15	2	13%		
Do	1 200	Do		& under 60'	5	0	0%	9 11 0	
Cyllin & Phenyle & Crude oil 1 1 2	1 100	Do		30-35"	23	17	74%		
Do	1 100	Do		55"	11	1	9%	8 9 0	
Do 1 2 3	1 100	Do		30-35"	35	15	51%		
Do	1 100	Do		60"	11	0	0%	17 0 0	
Crude oil emulsion with soft soap (scum removed)	3 100	Do		60"	10	6	60%		
Do	10 100	Do		60"	10	3	33%	50 0 0	
Phenyle and Petrol 1 1	1 200	Do	15-20"	30"	10	0	0%	4 1 0	
Do	1 400	Do	20"	40'	6	0	0%	2 2 0	
Do	1 500	Do	30"	50"	4	0	0%	1 1 0	
Do	1 1600	Do	40'	50"	5	1	20%		
Do	1 3200	Do	35"	60"	5	5	100%		
Phenyle & Benzine 1 1	1 200	Do	15"	30"	4	0	0%		
Do	1 400	Do	20'	40"	4	0	0%		
Do	1 800	Do	20"	50"	5	0	0%		
Do	1 1600	Do	30"	50"	5	0	0%	7 6 0	In one case with one recovery
Cyllin & Petrol 1 1	1 200	Do	10-30	40'	15	1	7%		
Do	1 400	Do	30"	30-60"	29	1	4%	3 11 0	Do do
Do	1 500	Do	30"	55"	8	1	13%		
Do	1 1600	Do	45"	60"	5	3	60%		
Do	1 2000	Do		60"	6	6	100%		
Do	1 3200	Do		60"	5	5	100%		
Cyllin & Benzine 1 1	1 200	Do	15"	30"	5	0	0%		
Do	1 400	Do	20-25"	40-45"	10	0	0%		
Cyllin & Kerosene oil 1 1	1 200	Do	30"	45"	5	0	0%		
Do	1 400	Do	35"	55"	5	1	20%		

Indian Medical Gazette.

JULY, 1907

SIR JOSEPH FAYRER

WITH the death of Sir Joseph Fayrer, which took place at Falmouth on 21st May 1907, passed away the most successful Indian Medical Service Officer of the past half century. Though he did not, like Holwell, rise to be Governor of Bengal, or to be an Ambassador, like Sir John McNeill, still such distinctions are not likely again to fall to the lot of an officer in any of the public medical services. And Sir Joseph's career has been one of brilliant success, without any such extra professional employment.

Joseph Fayrer was the son of an officer in the Navy, and was born at Plymouth on 6th December 1824. He entered Charing Cross Hospital as a medical student in 1844, and took the M R C S in 1847, immediately entering the Royal Navy as an Assistant Surgeon on 4th August 1847, being posted to H M S *Victory*, for service at Haslar Hospital. Soon afterwards he was granted leave to travel with Lord Mount-Edgcumbe as private surgeon. During these travels he saw some fighting in the Sicilian rebellion of 1847-48, and gained experience in the treatment of the wounded there, and again in the attack on Rome by the French troops under General Oudinot in 1849. In that year he also took the degree of M D, Rome. On his return to England he resigned his naval commission, and shortly afterwards, on 6th December 1849, was appointed an Assistant Surgeon in the Ordnance Department. The medical service of the artillery was then a separate service from the regular Army Medical Department. Four months later that department was reduced in numbers, and Fayrer being the junior officer in it was temporarily discharged. Almost immediately afterwards he got a commission as Assistant Surgeon in the Bengal Medical Service, through the interest of Lady Malcolm, widow of Sir John Malcolm, G C B, and sailed for India on 29th June 1850, his commission dating from that day.

After serving for a short time at Dum-Dum, Chinsura, and Cherrapoonjee, Fayrer was sent in April 1852 to Burma, as an Assistant Field Surgeon, and was present at the bombardment of the stockades on the Rangoon river, the capture

of Rangoon, and subsequent operations. At the close of the war he was appointed Residency Surgeon of Lucknow, one of the most coveted appointments open to the I M S, which thus fell to Fayrer with less than three years' service. The appointment, moreover, was notified to him in an autograph letter from Lord Dalhousie, who wrote that it was specially bestowed upon him, as being the best medical appointment in the gift of the Governor-General, given to the Assistant Surgeon, who was considered to have rendered the best service in the Burmese war.

Fayrer joined his appointment at Lucknow towards the latter end of 1853. Colonel Sleeman was then Resident, but was shortly afterwards succeeded by Sir James Outram. The Residency Surgeon's duties were numerous and varied. Besides those falling directly under that title, he was Superintendent of the King's Hospital, of the Khanat Khana, or pension establishment, and of the public garden, the Char bagh, also medical attendant of the Martinière School, and Postmaster, in addition to which he was soon after made Honorary Assistant Resident.

While at Lucknow, Fayrer met his future wife, a daughter of Brigadier-General A. Spens, commanding the British troops there. Their marriage took place at that place on 4th October 1855. On 4th February 1856, Oudh was annexed to the British territories. Outram recommended Fayrer for appointment as Deputy Commissioner of Lucknow, but he determined not to leave the profession in which he had done so well thus far, and preferred the appointment of Civil Surgeon of Lucknow.

Fayrer served in the Lucknow Garrison throughout the siege of the Residency. The native troops in Lucknow Cantonment mutinied on 30th May 1857. The disastrous action at Chinhut was fought a month later, on 30th June, after which the small European force was besieged in the Residency. It was in Fayrer's house that Henry Lawrence died on 4th July. The garrison was relieved by Outram and Havelock on 25th September, after a siege of 87 days by an immensely superior force, in possession of heavy artillery (1).

The second siege of Lucknow lasted to 17th November, when the second relief by Sir Colin

(1) "Hold it for fifteen days! we have held it for eighty seven!"

And ever aloft on the palace roof the old banner of England blew."

Tennyson's 'Defence of Lucknow'

Campbell was effected. The garrison was withdrawn on the 18th, Fayrer and his wife went through Cawnpore to Allahabad, thence by steamer down the Ganges to Calcutta. On arrival at the Presidency he was invalided, and left for England in the *Bentinch* in March 1858.

The medical officers present in Lucknow during the siege were Superintending Surgeon Scott (A M D), Surgeon Ogilvie, Assistant Surgeon Boyd (32nd Foot), Surgeons J Campbell (7th Light Cavalry), and W Brydon (2) (71st N I), Assistant Surgeons J Fayrer (Civil Surgeon), R Bird (Artillery), S B Patridge (2nd Oudh Irregular Cavalry), H M Greenhow, E Darby (died of wounds on 27th October), and G B Hadow. Fayrer's name is included in a list of medical officers killed in the mutiny, in the *Lancet* of 25th September 1857 (3).

Fayrer was mentioned in despatches of 26th September and 25th November 1857, received the thanks of Government twice, was promoted to the rank of Brevet-Surgeon, received war batta and twelve months' prize money, the mutiny medal with clasp for the defence of Lucknow, and one year's extra service towards pension. Three other Assistant Surgeons, R Bird, H M Greenhow, and J M R Amesbury, of whom the first two were also in Lucknow during the siege, got promotion to Brevet-Surgeon.

While on furlough, Fayrer took the degree of M D at Edinburgh, in 1859, becoming also F R C S, Ed, and F R S, Ed. Soon after he received the offer of the appointment of Professor of Surgery, and First Surgeon to the Medical College Hospital, Calcutta, and, cancelling the rest of his furlough, landed in Calcutta on 29th April 1859, less than fourteen months after he had left India. S B Patridge, one of his companions in Lucknow during the siege, had in the meantime received the post of Professor of Anatomy and Second Surgeon.

In 1867 he began the series of investigations into Indian snake poison, which resulted in the publication of the *Thanatophadia of India* in 1872. In 1868, the C S I was conferred

upon him. In 1870, he accompanied the Duke of Edinburgh on his tour through India. The same year he was promoted to Surgeon-Major. In 1871, he was appointed Honorary Physician to the Queen. On 29th March 1872, he left India, on furlough, but as it turned out, permanently.

In 1872, Fayrer was elected F R C P, London, and in February 1873, was appointed a member of the Medical Board of the India Office. The President, Sir James Ranald Martin, resigned the same year (he died on 27th November 1874), and Fayrer succeeded him in that office, from 8th December 1873, retiring from the service with the Honorary rank of Deputy Surgeon-General, and a pension of only £365. He was granted local rank as Surgeon-General from the date of assumption of office.

Fayrer was specially selected to accompany the King, then Prince of Wales, on his visit to India in 1875-76. On their way through Egypt, the Khedive presented him, as well as the other members of the Prince's Staff, with the order of the Medjidie. He was invested with the K C S I at the durbar held by the Prince at Allahabad on 7th March 1876, and on the voyage home received the Star of the Order of Conception of Portugal on 6th May. The party landed in England on 11th May, and next day Fayrer was gazetted Honorary Physician to the Prince of Wales.

During the next nineteen years, Fayrer was a successful London physician, and the recipient of many honorary degrees and diplomas. On 19th April 1877, he was elected a Fellow of the Royal Society. The next year he was made Consulting Physician and a Life Governor of Charing Cross Hospital, his old school. In April 1878, he became a Fellow of the Royal College of Surgeons, England, and in July Edinburgh University conferred upon him the degree of LL D. The same degree was conferred upon him by St Andrews in 1890. In 1891, he was made a Fellow of the College of Physicians of Philadelphia, and in December 1892, a Doctor of Philosophy of Padua University. On 12th January 1895, he retired from the Medical Board with the rank of Surgeon-General, and his active life came to a close. In January 1896, he was created a Baronet. A good service pension was conferred upon him from 25th October 1898.

Sir Joseph Fayrer's most important contribution to medicine was his work on snake poison,

(2) Surgeon W Brydon was the sole survivor of the retreat from Kabul in January 1842, and is the subject of the well known picture by Lady Butler, "The Remnant of an Army." He received the C B for his services in the mutiny, as did also Surgeon J Campbell.

(3) Assistant Surgeon W W Ireland was officially returned as killed at the action of Najafgarh, before Delhi, on 26th August 1857, being shot through the head. He recovered, and is still alive.

but throughout his career he has been a voluminous writer on professional subjects. He had great influence, which was used in many instances for the advantage of the service to which he had formerly belonged. Many of the honorary distinctions bestowed on officers of the I. M. S. were granted on Fayrer's recommendation. Most of the officers of the Indian Services will remember him in his capacity of President of the Medical Board, during his long tenure of office of over twenty-one years, and many of them have reason to thank him for much kindness. To the members of the I. M. S., he is well known as Examiner in Anatomy and Physiology for the Medical Services, a post to which he was appointed in January 1880. Most of the Lieutenant-Colonels and Majors now serving must have come up before him when entering the service. A great scientific discoverer Fayrer was not. His name will not go down to posterity connected with any important advance in medicine or surgery. But he was a man who had worked hard and worked well throughout a long career, a career almost from the first of brilliant success, he was popular with his equals and his juniors, and, as many people have reason to know, was a man of great generosity. Peace be to his ashes.

Sir Joseph Fayrer's war services, which, by the way, are not given in the Indian Army List, were as follows—

Italy, 1848. Operations in Palermo, between Neapolitan and Sicilian troops, and attack on city of Rome by French forces under General Oudinot.

Burma, 1852-53. Destruction of Stockades on Rangoon river, capture of Rangoon, and subsequent operations, medal and clasp.

India, 1857-58. Defence of Lucknow. Mentioned in despatches by Sir J. Inglis, in despatch of 26th September 1857, and by Sir J. Outram in despatch of 25th November 1857. Thanks of Government (twice), medal and clasp, Brevet of Surgeon, and one year's extra service for defence of Lucknow.

Throughout his career, Sir Joseph was a voluminous writer. His published works include the following, those marked with an asterisk—being pamphlets—

- 1 * "Amputation at the Hip-joint"—Calcutta, 1864
- 2 "Clinical Surgery in India"—London, 1866
- 3 * "The Duke of Edinburgh in India"—Calcutta, 1870
- 4 "The Thanatophidia of India"—London, 1872
- 5 "Clinical and Pathological Observations in India"—London, 1873
- 6 "The Royal Bengal Tiger, his Life and Death"—London, 1875
- 7 * "Notes of the Visits to India of H. R. H. the Prince of Wales and Duke of Edinburgh"—London, 1879, privately printed

8 "Tropical Dysentery and Chronic Diarrhoea"—London, 1881

9 "The Climate and Fevers of India" (Croonian Lectures of 1882)—London, 1882

10 Articles in Quain's "Dictionary of Medicine," first edition, 1882, on (a) Beriberi, (b) Delhi Sore or Boil, (c) Dengue, (d) Elephantiasis Arabum, (e) Sunstroke, (f) Venom, effects of, and venomous animals—London, 1882

11 * (With J. Ewart) "Destratements des maladies Tropicales dans les Climats Tempérés"—1883

12 * "On the Preservation of Health in India"—London, 1880

13 (With Sir T. Lauder Brunton) Edited third edition of Murchison's "Clinical Lectures on Diseases of the Liver, Jaundice, and Abdominal Dropsy"—London 1885

14 * "On the origin, habits, and diffusion of Cholera"—1886

15 * "Rules regarding defects of vision which disqualify candidates for admission into the various departments of the Indian Government Service"—London, 1886

16 * "The Natural History and Epidemiology of Cholera, being the annual oration of the Medical Society of London, 1888"—London, 1888

17 "On Serpent Worship and on the Venomous Snakes of India"—London, 1891

18 Articles in Davidson's "Diseases and Hygiene of Warm Climates," 1893, on (a) Tropical Diarrhoea, (b) Tropical Liver Abscess, (c) Sunstroke—London, 1893

19 Articles in Allbutt's "System of Medicine," 1896-97, on * (a) Insolation or Sunstroke, in Vol. I, 1896, (b) On the Climate and some of the Fevers of India, in Vol. II, 1897

20 "Life of Inspector General Sir James Ranald Martin"—London, 1897

21 "Recollections of my Life"—London, 1900

22 Articles in Quain's "Dictionary of Medicine," 3rd Edition, 1902, on (a) Sunstroke, (b) Bites of Venomous Animals

THE UNITED SERVICES MEDICAL SOCIETY

MANY of our readers will have read in the home medical papers or will have received notifications about the formation of a "United Services Medical Society" in London. The preliminary meeting has been held and it has been agreed to form a Society, with the following objects (which we quote from an account received of the first meeting)—

(1) The furtherance of sciences which bear upon the preservation of the health of forces afloat and ashore, at home and abroad, in war and in peace. (2) The study of diseases and injuries incidental to the life of sailors and soldiers under the varying conditions of climate, locality, and circumstances to which they are exposed in

* Also in new Edition of Allbutt's System, Vol. II, Part II, p. 771. Probably his last professional writing.—Ed., I. M. G.

the performance of their duties and the treatment of the same (3) The study of organizations, methods, and apparatus for the amelioration of the condition of the wounded in war (4) All matters which come within the scope of the technical duties of naval and military medical officers. Inspector General Ellis added that the membership of the Society would consist of medical officers of the navy, British and Indian armies, and the Auxiliary and Colonial Forces, on the active or retired lists, who should be admitted without ballot upon application to the Council. Persons of distinction in sciences of which the Society took cognizance, medical officers of foreign navies and armies, and other persons whose affiliation to the Society might seem to the Council to be of advantage to the Society, would be invited by the Council to become associate members. The medical members of the Consultative Board of the Naval Medical Service, and the Advisory Board of the Army Medical Service, would be *ex officio* associate members. The ordinary meetings would be held monthly, by permission, in the Royal Army Medical College, and the papers read would be published. The Society would be managed by a Council, consisting of a president, to be elected annually, and eight members—two from the navy, two from the army, two from the Indian service and two from the auxiliary forces, also four *ex officio* members—namely, the Director General, Naval Medical Service, the Director General, Army Medical Service, the President of the Medical Board at the India Office, and the Commandant, Royal Army Medical College. The Chairman then formally put the motion that the society should be formed, and the proposed constitution provisionally accepted, this was seconded by Surgeon General Sir Thomas Gallway, P. M. O., Aldershot, and passed unanimously. On the motion of Sir Alfred Keogh, Director General, Army Medical Service, seconded by Surgeon General A. M. Branfoot, *CIE*, retired Indian Medical Service, the Chairman was elected President of the Society for one year. Fleet Surgeon W. W. Fryn and Lieutenant Colonel C. H. Melville were appointed Honorary Secretaries and Lieutenant Colonel D. Wardrop, Honorary Treasurer. The following eight officers, representing the different services, were elected by the Society to form the Council: Fleet Surgeon Craig, Fleet Surgeon Dalton, for the navy, Major Holt and Lieutenant Colonel Cottell, for the army, Lieutenant Colonel Sir R. Havelock Charles, Lieutenant Colonel Freyer, for the Indian Medical Service, Lieutenant Colonel Sir James Clark and Lieutenant-Colonel Valentine Mathews, for the auxiliary forces.

We take it that the first thought of every I. M. S. officer reading the above account is, in what way can the Indian Medical Service take its proper share in the working of this Society?

We also are of opinion that the officers of the Indian Medical Service are cordially disposed to support and take their share in such a Society. The fact that two such able and representative retired members of the Indian Medical Service

as Lieutenant-Colonel P. J. Freyer and Sir R. Havelock Charles, K. C. V. O., are representatives of our service on the Committee is a guarantee that the interests and reputation of the service will not be neglected nor kept in the background.

We are, however, distinctly of opinion that the objects of this new Society, if they are confined to those enumerated above, will not prove sufficiently attractive to a large percentage of Indian Medical Service officers.

No doubt the diseases of soldiers and sailors afloat and ashore, and their prevention, are subjects of much interest to men in the Indian Medical Service, but a vast number of the men of our service are in Civil employ and are practising physicians and surgeons, and their interests are much wider than is suggested by the objects of the new Society, as quoted above. The study of diseases of the tropics, the incidence of the diseases of temperate climates among Europeans in the tropics and among the natives of those countries, the problems of municipal and rural sanitation, and above all the study of surgery are the subjects which are of most interest to the members of the Indian Medical Service who are in Civil employ. We may be wrong, but it seems to us that the declared "objects" of the new Society must be widened if it is to attract officers of the Indian Medical Service. As quoted above, the objects of the new Society go little further than the programme of the Naval and Military section at the annual meeting of the British Medical Association, and hitherto this section has failed to attract officers of our service. We do not for a moment underrate the value of the study of the problems of military and naval hygiene above announced as the object of the new Society, but we are deliberately of opinion that if the Society is to attract men of the Indian Medical Service, it must widen its views and admit subjects not (apparently) at present contemplated.

The fact that two such distinguished surgeons of our service as Freyer and Charles are on the Committee is an augury for its success, and probably is a guarantee that such subjects as stone, cataract, liver abscess, elephantiasis, and general tropical sanitation will not be neglected.

After all, the Society will be as its members make it. The subscription, we understand, will be small, and we are strongly of opinion that Indian Medical Service Officers should join in

large numbers and should contribute also to the transactions

We have no doubt many retired officers of the service residing in or about London will join the Society, to them we cannot directly appeal, but we appeal to officers of the service in India and on leave in Europe to join the new Society. To men on furlough and especially to men on study leave in London the Society will be most useful. It will be a place for meeting other men on leave and of communicating ideas and opinions. It will also serve, we hope, as a means of diffusing more accurate ideas of the work of men in India, and of the great scope that exists in this country for all classes of medical and surgical work.

We therefore commend the Society to the notice of our service readers, and we strongly recommend Indian Medical Service officers to join the Society and help to enlarge its scope.

Current Topics.

THE LATE MAJOR D M MOIR, M D, I M S

It is with feelings of the deepest personal regret that we here record the death of Major David Macbeth Moir, I M S, Professor of Anatomy in the Calcutta Medical College and Surgeon to the College Hospital.

Major Moir's career in the Indian Medical Service had been a brilliant one, he was a son of the late Surgeon-Major Moir, I M S, who was in his time a well-known medical officer, and the grandson and namesake of David Macbeth Moir, a celebrated literary man in the Edinburgh of a former generation. D M Moir took the degree of M A at St Andrew's University at the early age of 21 years in 1881, he then entered the Medical School of Edinburgh University, where he had a very distinguished career, especially distinguishing himself in the School of Anatomy. He acted as a Demonstrator in Anatomy, and having taken the degrees of M B and C M in 1885, he acted as House Surgeon at the Royal Infirmary as Resident Medical Officer of Chalmers' Hospital, Resident Physician in the Royal Hospital for Sick Children and Resident Physician at the Edinburgh Royal Maternity Hospital.

After having qualified himself so thoroughly by holding the above appointments, he entered the Indian Medical Service, the first man of his batch, with his Commission dated 31st March 1888. After holding several officiating appointments in military employ and serving in charge of a Field Hospital in the Chin-Lushai Expedition of 1889-90 (medal and clasp), he early entered

civil employ as Acting Civil Surgeon of Chittagong. He was soon brought over to Calcutta, and for many years held resident appointments in the Medical College Hospital and Presidency General Hospital. At the outbreak of the Frontier troubles of 1897, he reverted to military duty and acted as Registrar of the General Hospital at the Base at Rawal Pindi. On return to civil employ he took leave home, and on return from leave officiated as Surgeon-Superintendent of the Presidency General Hospital.

He several times officiated for Lieut Colonel Sir R Havelock Charles, K C V O, in the Professorship of Anatomy, and when Sir Havelock Charles took over the Professorship of Surgery on the promotion of the Hon'ble Colonel R D Murray, I M S, Major Moir was appointed Professor of Surgical and Descriptive Anatomy, a post which all recognized was won by him by sheer merit alone. He was not long allowed to enjoy the fruits of his labour. He, however, acquired a large practice in Calcutta, and was much liked and respected by all his patients.

Among his colleagues and in the service, generally, D M Moir was very popular, he was recognized to be a man of sound opinion and a brilliant operator. His motto was "thorough," and be the matter of small or of great importance, everything he took up was done thoroughly.

He was a keen service man, and its interests were ever before him. Many men in the service will remember him for his many kindnesses to them.

Only a few days before his sudden illness, we received a letter from him on the subject of the United Services Medical Society in London, he was all eager that the Indian Medical Service should take its due place in that Society, and urged us to encourage I M S men to join the Society for that purpose.

The *Indian Medical Gazette* owes much to D M Moir. Many years ago when the Gazette was at its nadir of usefulness, Moir assisted the late Dr Crombie to improve it, and it was during his own editorship that the Gazette really began to improve and to attract contributors from all parts of India. The appointment of associate editors was a scheme devised by him to widen the sphere of usefulness of the Gazette and to attach to it contributors from all the provinces. Our readers need not be reminded that in this respect his scheme has been perfectly successful.

Major Moir will be long remembered by his many friends in Bengal and other parts of India, and the utmost sympathy will be extended to his young widow.

Already we have heard that it is proposed to raise subscriptions for a memorial to Moir, as we go to press at once, we have not time to await a decision as to the form the memorial

will take We have heard of a suggestion for the institution of a Mon Medal open to the Indian Medical Service to be given, say triennially, for good professional work. This would be a graceful way of perpetuating the memory of one who succeeded beyond the average by sheer professional merit, and its restriction to his brother officers of the Indian Medical Service is a form which is particularly appropriate in memory of one to whom the good and the interests of the service were ever dear. Separately or combined with this, we hope that some form of memorial in the Calcutta Medical College will be instituted.

THE PASTEUR INSTITUTE, KASAUJI

THE report of the Pasteur Institute, Kasauli, for the sixth year ending 8th August 1906, is one of exceptional interest and value. Not only does it give the record of the year's work, which is steadily increasing, but it goes into a lot of subjects connected with rabies in animals and man, which are of very general interest and indeed importance.

The report draws attention to the great importance of securing alive any animal suspected to be "mad," if the animal is really suffering from rabies, it will be dead in five or six days, if it has only bitten in bad temper, the animal will remain alive. It is not intended that a patient should wait for ten or even six days before getting away to the Institute, but in case of a person bit, if the dog or other animal is secured and if it lives for six days after inflicting the bite, the patient has the great satisfaction of knowing that the dog which bit him was not 'mad' and he need not go on with the treatment.

In the same way the owner of a valuable dog can assure his neighbours that his dog, which may have been alleged to be 'mad', is not so, after he has kept it under observation for 6 to 10 days if it is still alive and well after that period.

The report also shows the danger of sending the brain of a suspected rabid dog to the Institute and then awaiting the answer. This is foolish, the answer if negative merely implies that the test failed, it does not imply that the brain was not infected, no time therefore should be lost in this way.

Another very interesting section discusses what is called the "Escape probabilities" in rabies. What is the reply to the question "What is the mortality among persons bitten by rabid animals, if untreated?"

The only known statistics are those collected by the various Antirabic Institutes, and the most carefully compiled statistics put the death-rate at 15 per cent, and these necessarily include cases where the animals were only doubtfully 'mad.' This figure then may be taken as 15, and it

contrasts badly with the "under one per cent" mortality under Pasteurian methods.

We specially direct the attention of our readers to the appendices to this report, *eg*, the one giving information useful to persons sending patients, or the one addressed to the patients themselves. These give a lot of useful information and should be at hand for reference in the office of every medical officer. Another appendix describes the measures to be adopted in case of a dog bitten by a rabid dog and gives much interesting information relating to rabies in animals. The last appendix describes the measures to be taken by a person bitten by a rabid or supposed rabid dog. All these are valuable, and we would recommend medical officers of hospitals having them reprinted and hung up in their offices. Indeed, the whole report is so interesting that it should be read by all medical men.

THE LEISHMAN DONOVAN BODY IN THE BED BUG

SINCE 1904 when Leonard Rogers announced that he had succeeded in observing the development of the parasites known as Leishman-Donovan bodies into flagellates, in splenic blood taken from a case of *kala-azar*, much work has been done which has added to our knowledge of this stage of the parasites. Leishman, Christophers, Stratham and others have confirmed Rogers' results, but it is premature yet to say to what species or genus these bodies belong.

It has been said that these parasites cannot be found in the peripheral blood, but Major C Donovan, I.M.S., has shown that this is not the case, and in a memoir (*See Memoirs, Medical Officers, Government of India*, No. 27, 1907) just published, Capt W S Patton, M.B., I.M.S., states that in 38 out of 45 cases of *kala-azar* parasites have been found in peripheral blood. These results are important, for they show that it is not necessary always to puncture the spleen, a small operation by no means always devoid of risk. In the Memoir just quoted Capt Patton gives a useful history of the Leishman-Donovan body and of some cases of *kala-azar* studied in Madras, but the most important part of his work are his experiments among blood-sucking insects. He examined lice, mosquitoes, and ticks but without satisfactory results but saw nothing to suggest the development of the Leishman-Donovan bodies in these animals.

He then turned to the bed-bug (which L Rogers in his recent Milroy lectures looks upon as a possible carrier of infection). Capt Patton, in the Memoir, then gives details of these experiments, to which we refer our readers. We may quote his conclusions which are as follows—

"1 The Leishman-Donovan body occurs frequently in the peripheral circulation in cases of *kala-azar* in Madras, the parasites being

seen in the leucocytes, but never in the red-cells or free in the plasma

2 In certain cases with extensive ulceration of the large intestine there occurs an increase of the polymorphonuclear leucocytes, and many of these cells contain parasites

3 Though the Leishman-Donovan body has been recovered from the mid-guts of lice (*Pediculus capitis*), it was never found in *P. corporis*, *Culex fatigans*, *Anopheles stephensi*, *Stegomyia suginis*, or the tick (*Ornithodoros savignyi*)

4 The parasites can be recovered from the mid-gut of bugs (*Cimex maculipes*) fed on cases of *kala-azar*, and kept at room temperature (80—82°F) and these parasites have in a few cases shown considerable development

PRATT'S OPERATION FOR HYDROCELE

THE paper we published by Dr L G Fink in our May number (p 173) has given rise to considerable correspondence, testifying to the great value of the operation introduced to Surgeons in India by Surgeon-Major (now Lt-Col) J J Pratt, I.M.S., the present Civil Surgeon of Lucknow. It will be of interest if we refer briefly to the first papers by Lt-Col Pratt on this subject

The first was in the *Indian Medical Gazette* for August 1898, in this paper Lt-Col Pratt referred to a previous one (*Indian Medical Gazette*, October 1896), in which he and Surgeon-Major (now Lt-Col) C P Lukis had published the results of 126 cases of hydrocele treated by excision of the parietal layer of the sac. By August 1898 he had operated on several hundred more cases by the same method and with an almost equally gratifying amount of success. Experience, however, had taught him the danger of recurrent hæmorrhage. He then goes on to state that in the beginning of 1898 he introduced an operation "in principle entirely distinct from the one previously practised"

The following are his words —

"The first steps are the same as in the operation for excision of the sac. After careful shaving and thorough washing and cleansing of the parts, the scrotum is made tense by being firmly grasped in one hand, an incision is made along the whole length of its long axis, the tunica exposed, and the testicle almost entirely withdrawn from the scrotum, then the tunica having been punctured with the knife, the puncture is enlarged with the scissors to a sufficient extent to allow of the testicle being drawn out through the opening. This having been done, the parietal tunica is turned inside out, and the opposite edges of the incision in the sac united behind the epididymis by a single catgut suture. The cavity of the tunica thus ceases to exist, and the testicle and epididymis are covered almost completely by one continuous layer of serous membrane. The skin incision is closed with a continuous suture, and the operation completed

The advantages claimed for this method, which I propose styling the operation 'by incision and excision of the sac,' are the ease and rapidity with which it can

be performed, and the absence of hæmorrhage at any stage of the proceedings. The time required is about a quarter that necessary for the operation by excision of the sac, in which, on an average, some eight or nine vessels require ligation. The further advantage of having only one ligature inside the scrotum is obvious"

Lt-Col Pratt considered this operation specially suitable to moderate-sized hydroceles, i.e., about the size of a coconut. For enormous hydroceles he recommended a modified excision "removing the anterior part of the sac before everting"

Some months later (*Indian Medical Gazette*, April 1899), Lt-Col Pratt reverts to the subject and describes 128 cases of the new operation done at Fyzabad by himself, Lt-Col W G Alpin and Assistant-Surgeon Munna Lall, at the same time he refers to the work of a French Surgeon M Deloie, who was working on the same lines and had recently recommended an operation practically identical with the method above-mentioned for enormous hydroceles, but Lt-Col Pratt's further experience showed him that it was "rarely if ever advisable to cut away any portion of the sac," even when the tumour was as big as a football

There appears to be no doubt, therefore, that the credit of having introduced this operation "by incision and eversion of the sac" is due to Lt-Col J J Pratt, I.M.S., and that this operation which has stood the test of time, is rightly known all over India as "Pratt's operation for hydrocele"

For several years past, mention has been made in the Medical Journals of a special spotted fever known in Montana, Idaho, and other places in the United States as the "Spotted Fever of the Rocky Mountains." It has also been called "black fever," "black measles," and more recently it has been called *Protoplasmic hominis*, and a tick, *Dermacentor reticulatus occidentalis*, has been incriminated as the carrier of the virus. This fever must not be confounded with the tick fever, caused by a spirochæta, which is conveyed by the bite of another tick *Ornithodoros moubata* (Murray), which is either the same as or closely allied to "relapsing fever." The most recent article on the Rocky Mountain spotted fever, which we have seen, is that in Allbutt's *System* (Vol 2, Part II, p 307). It is by Dr L Sambon, and he does not hesitate to pronounce that the Rocky Mountain fever is identical with typhus, and recently in Egypt a protozoon, *Babesia hominis*, has been found in cases of typhus. More recently (*Journal A M A*, April 6th, 1907), Dr C F Kieffer has described an "intermittent tick fever" among soldiers stationed at posts in the Rocky Mountains. The disease has from three to seven paroxysms of fever, each lasting about 48 hours, and in the majority a history of being bitten by ticks was obtained. These ticks have been identified by Stiles, a reliable

authority, as *Demacentor occidentalis*, which is identical, it is now said, with *D. Andersoni*. It is evident that there is still much work to be done in the differentiation of tick fevers

IN our May number (p 187), we referred to the cloth called Solair, of a khaki shade outside and on the inner surface red, which has been designed to afford a protection against the ultra-violet rays in sunlight. This cloth has been shown by Mr Baly, of University College, London, to be impervious to the actinic rays of the sun. This cloth is obtainable from the well-known firm, Messrs H Clark & Co, of Calcutta and Mussoorie

IN Scientific Memoir (No 28), Captain S R Christophers, M B, I M S, Superintendent of the King Institute of Preventive Medicine, Madras, has described the sexual cycle of leucocytozoon canis in the tick. The subject is too technical to be described here, but our readers are recommended to read the whole account as given by Captain Christophers

DURING the year 1906 dysentery of a severe type prevailed in some of the prisons in the Straits Settlements. The Singapore Prison out of a daily average strength of 920 prisoners had no less than 74 deaths. The death-rates in this jail for the past three years has been 55.4 per mille in 1904, 33.2 in 1905, and 78.4 in 1906. It is noted that bell-bell has almost disappeared, due to the "non-use of Siam rice or the use of parboiled rice." A large number of prisoners are received into jail in very poor health. Tuberculosis is also prevalent in Singapore, and 21 prisoners arrived at the Jail with this disease on them.

In the Criminal Prison, Penang, there were 20 deaths out of a daily average strength of 300, that is a death-rate of over 60 per mille, 11 of these deaths was due to dysentery and the dysentery is attributed to impurities in the drinking-water, boiling and cooling the water was tried in August 1906, but "without any appreciable effect on the number of dysentery cases," an experience which could easily be paralleled in many parts of India. In our opinion though dysentery can be conveyed by water in such cases it appears in sharp and short-lived epidemics. We have never been able to satisfy ourselves that the dysentery of Indian jails or of English Asylums is due to the water-supply. This institutional dysentery is a matter which needs investigation, though it must not be overlooked that in a certain proportion of cases of dysentery the prisoners come to jail already infected.

THE unfortunate episode in anti-plague inoculation, known as the Mulkowal incident, has

had its counterpart in the Philippines. In the Laboratory of the Bureau of Science several million units of cholera vaccine virus have been prepared and also several thousand doses of plague prophylactic have been used without accident and with good results. Unfortunately some one placed a 48-hour virulent plague culture among the cholera cultures, the blue pencil marks which designated the culture having been erased by handling, and it was afterwards found that one such culture was missing from the incubator. It was proved by the Committee appointed by the Governor-General that a "48-hour richly grown plague culture resembled some of the cholera cultures so strongly that the Committee were unable to identify or pick out such a plague culture when it was placed among a number of cholera cultures of the strain employed." By this accident the cholera vaccine was contaminated with a culture of plague bacilli and several natives who were inoculated died (J A M A, April 13th)

WE understand that a hostel for students of the Grant Medical College, Bombay, is about to be constructed, and steps have been taken to provide more adequate accommodation for the large number of students attending the classes on Chemistry and Physiology. Plans for a new building for the Professors of Pathology and Physiology with a common Lecture Theatre and Laboratories are being prepared.

EPISTAXIS in middle life, says Dr Harry Campbell, "means generally granular kidney, and fortunate is he who bleeds at the nose instead of into the brain."

WE are requested to state that there has been no plague in Singapore since 1901, and the statement in our July number, 1906, that seemed to imply its existence there in 1906 is incorrect.

THE yellow fever mosquito has received official baptism and is now to be known as *Stegomyia calopus*. It was formerly called *Culex fasciatus*, *Culex calopus*, and *Stegomyia fasciata*. Let us hope that no further changes of nomenclature will be made.

As we go to press we have received a very useful pamphlet by Dr W C Hossack, of the Calcutta Plague Department, on the identification of the rats connected with plague. We shall notice it later and meantime highly commend it to all on plague duty. It is obtainable at the Pioneer Press, Allahabad.

Reviews

Metabolism and Practical Medicine—By CARL VON NOORDEN, Professor of the First University Medical Clinic, Vienna. In three volumes. Price £2-12-6. Publisher William Heinemann, London. Volume I. The Physiology of Metabolism. By ADOLF MAGNUS LEVI, Berlin. English issue under the Editorship of I. Walker Hall, Professor of Pathology, University College, Bristol, 1907.

AN English edition of von Noorden's well-known "Text book of Metabolism" does not require any apology for its production. The arrangement of the sections and their contents is the same as that of the first edition. The present text is mainly due to the co-operation of a number of workers in this branch of medical science. A few decades ago the scientific examination of the processes of metabolism was almost confined to investigators of the German, French and Italian nations, but in the last twenty years a number of English and American men of science have turned their attention to this branch of scientific medicine with the result that much has been added to our knowledge of metabolism in health and disease. There is not the shadow of a doubt, but that the author speaks closely to the point when he says "It is my conviction that the rising generation of English and American medical men regard the problems of metabolism with an interest that grows from year to year, and that these men will eagerly welcome this book as a trustworthy guide and a stimulating source of information."

Professor von Noorden pays a well-merited tribute to Professor Walker-Hall for the brilliant manner in which he has acquitted himself in the editing of the English edition, a tribute in which we would respectfully wish to join.

In this first volume no fewer than seven different translators have been engaged, the greater part of the work, however, seems to have fallen on Professor A. J. Mihoy, A. J. Blake and Monica Robertson.

The book is divided into four separate parts—the first three parts deal with a Review of the food-stuffs, digestion and absorption, and the fate of the food-stuffs in the Tissues, respectively. The fourth part takes up metabolism in man—in a most complete and comprehensive manner—under the following headings—A. The Total Energy Exchange. B. Nitrogenous Metabolism. C. Influence of Muscular Work upon Metabolism. D. Influences of Sexual Processes. E. The Role of Water. F. Metabolism of Mineral Substances. G. Metabolism in Old Age.

Adolf Magnus-Levy states "no branch of pathology is so capable of being expressed by actual figures—the result of experimental determinations—as that of metabolism. The prob-

lems which it investigates are chiefly the quantitative variations of normal processes, so that a knowledge of the extent of metabolism in health is a necessary basis."

This work lays no claim to be an original or complete study in normal metabolism, its purpose is to bring together the necessary details, and to express in figures the extent of normal processes of metabolism so far as is necessary in order to enable a clear conception to be formed with regard to pathological processes.

The immense amount of work that has been spent in the production of this text-book may be gauged from the large number of pages of index to works of reference, the bibliography of the German edition has been enlarged to include recent English, American and other papers. The compilation of, the proving and selecting of those numerical standards that appear in the text in support of the views under consideration is alone a task of great magnitude. Of the manner in which the work has been carried out by von Noorden and his pupils it is impossible to speak too highly. In this volume the student of metabolism, in its widest signification, will find the latest and most accurate observations faithfully reproduced and the results discussed in a truly scientific manner. As a work of reference it is invaluable on account of the wealth of the bibliography.

It would be invidious to select any section as superior to the others, but, doubtless, most readers would look with interest for a criticism of Chittenden's work on nitrogenous metabolism. As is well known, Chittenden, from the results of his investigations, regards even what had previously been held to be a moderate proteid diet as one that contains too high a percentage of protein. This view has been severely traversed by Halliburton, Benedict, and others, these observers conclude that permanent reductions of protein intake are decidedly disadvantageous and not without possible danger. Von Noorden seems to think that, while it is impossible to call in question Chittenden's results, the theoretical conclusions he draws from them are much too general and are scarcely warranted. That the organism may be injured by an over-loading with the products of nitrogenous decomposition may be true in case of disease, but is it true for the healthy individual—or are carnivora less healthy than herbivora? Chittenden, however, makes a strong appeal for moderation in diet—a moderation which he states to mean a great saving in wear and tear of the bodily machinery—and most thoughtful men will, we think, be inclined to agree with him—that in general man eats far too much proteid or albuminous foods. In this connection we have an admirable discussion by von Noorden on the theory of "luxus consumption" and the influence of surplus diet on metabolism. He shows that, while it is impossible to reduce the expenditure for muscular activity without

affecting the work done, reduction of expenditure entailed in muscular activity may be obtained by dispensing with a number of daily and habitual movements which are to a certain extent purposeless. A man working on a minimum diet could avoid these although not without some sacrifice of comfort. He further reasons that there is only one way in which a true physiological saving of muscular work could be effected on a persistently low diet. On a low diet a man would very soon begin to lose weight, if, during the whole time, he kept his muscles in good condition, the loss would take place mainly from useless ballast, as a result he might eventually lose up to 10 per cent of the body weight. Seeing that a man's work consists more in altering his position than in moving or raising weights, the thin man has the advantage by reason of his own deficiency of ballast. It is thus possible to reduce the work-expenditure up to 10 per cent. He concludes that these purposeless movements represent a certain "luxus" in regard to the essential bodily economy, but not so far as the health and comfort of the individual are concerned. The apparent "luxus consumption" with an excess of food may not be accepted without further evidence in support of the possible reduction below a certain standard.

We have only alluded to this section as, at the present time, it is perhaps of more than ordinary interest, but we have not the slightest hesitation in saying that "The Physiology of Metabolism," as told by von Noorden, is a most complete and valuable compilation which no medical man, with any scientific bias whatever, can afford to be without.

Metabolism and Practical Medicine—By CARL VON NOORDEN. Volume II The Pathology of Metabolism. By Carl von Noorden, Fr Kraus, Ad Schmidt, W Weintraub, M Matthes and H Strauss. English Issue under the Editorship of Professor I Wakeley Hall. Publishers, William Heinemann, 1907.

THE first two volumes of "Metabolism and Practical Medicine" in English have been produced, the third and final volume will, we believe, soon be ready. The part we have at present before us—The Pathology of Metabolism—is divided into eight chapters. Chapters I and II deal with Hunger and chronic starvation and Overfeeding—both written by von Noorden. In Chapter III Fr Kraus discusses the metabolism of fever and infection, Chapter IV deals with the stomach and intestines, Chapter V with the metabolism of diseases of the liver, Chapter VI with diseases of respiration and circulation. The remaining two chapters take up the pathological metabolism of the blood and the kidneys and are by far the most important of the series.

This volume is got up practically on the same lines as the volume on the Physiology of Metabolism of which it is a continuation and a

practical application. There is the same conscientious research into the literature of the different subjects and the same wealth of references as characterized the first volume.

The Illustrated Medical Dictionary.—By W A NEWMAN DORLAND, A M, M D. Fourth Edition, revised and enlarged. London and Philadelphia. W B Saunders & Company, 1906 (July).

THE fourth revised edition of Dorland's Illustrated Medical Dictionary is a welcome addition to our bookshelves. We have used an earlier edition for several years past and have found it reliable and accurate. The definitions are carefully worded, and special attention is given to pronunciation, and the Greek and Latin derivations of words are correctly given. In the new edition not only have mistakes been corrected, but no less than 2,000 new words have been added, so that the volume can now claim to represent better than ever the current state of medical science. The illustrations were always good, but in this edition they have been improved by the addition of six coloured plates illustrating such subjects as appendicitis, gallstones, measles and "Leishman-Donovan bodies," the latter plate is a copy of Major Donovan's original one in the *Lancet*. The book is elegantly got up, well printed and with a handsome crimson flexible binding which makes it a pleasure to handle.

Pocket Medical Dictionary.—By W A NEWMAN DORLAND, A M, M D. London and Philadelphia. W B Saunders & Company. Fifth Edition, revised and enlarged.

THIS Pocket Dictionary is a reduced edition of Dorland's Illustrated Medical Dictionary which we have noticed so favourably above. The pocket edition has many of the good points of the larger work, and gives clear, concise and accurate definitions of all words used in medicine, surgery and allied sciences. It does not give derivations, but it gives carefully the proper pronunciation of all words. It includes numerous tables and ends with a complete table of doses. For those who want a small and reliable dictionary, this book is to be recommended. An objection has been made in our hearing to these American dictionaries, in that they reproduce American methods of spelling. This is true, but will not mislead the English reader in such a word as 'color,' whereas in other words both spellings are given, e.g., amceba and ameba, cæcum and cecum, cesarean and cesarean, retiology* and etiology, but gynecologist is only given, and not the alternative gynæcologist.

As we have said, this little volume is an admirable one, but as a work of reference we advise our readers to get the larger *Illustrated Dictionary* by the same author.

* The Oxford English Dictionary which is followed by most English typographers, printers and publishers uses *etiology* only. Also *Cæsarian*—Ed, I M C.

Saunders' Hand Atlases Dentistry, including Diseases of the Mouth—By G. PREISWEIK
Edited by G. W. WARREN, D.D.S. W. B. Saunders & Co., 1906

SAUNDERS' Hand Atlases are well known, and of the whole series we know of none of higher merit than that on Dentistry, translated from the German of Gustav Preisweik, one of the chief exponents of the modern views on dentistry.

The volume is very complete, it treats of the anatomy of the teeth, histology and physiology, then comes interesting chapters on the bacteriology, and on diseases of the mouth, *viz.*, stomatitis of all kinds, mumps, noma, syphilis, tuberculosis, tumours, fractures, and anomalies of the teeth and jaws.

The special chapters on defects of the teeth, the technique of filling, disease of the pulp, and on extraction are all good.

Like all this series of Atlases the volume is magnificently illustrated, with 103 coloured plates and 152 illustrations in the text. For all interested in dentistry the book is invaluable.

The Immediate Care of the Injured—By ALBERT S. MORROW, A.B., M.D. Published by W. B. Saunders & Co. 340 pp., 235 illustrations.

THE author in his preface says that he has endeavoured to prepare a book useful alike to physicians, nurses and laymen, and which at the same time will serve as a text-book for First Aid classes. He goes on to say that First Aid should never supersede proper medical and surgical attention, and that in all cases a physician should be immediately summoned, and in the meantime the "First-aiders" should do what he can. Having said this in his preface, the author makes no attempt in the body of the book to indicate to the various classes, to whom he wishes to appeal, the point at which their interference is likely to do more harm than good. Much of this ambiguity might be forgiven, were the author's statements of fact always correct. Here are a few instances of the errors referred to. The Haversian canals, lacunæ and canaliculi of bone are described as filled with blood, the nervous system is said to consist of a continuous chain of nerve cells (the italics are in the original), it is stated that a saturated solution of boric acid will quickly render dressings sterile, that silver is a germicidal agent (imagine the intelligent *paravallah* washing a wound with a guriaah-full of tank water into which he had dropped a rupee), that hæmorrhage should be stopped by water at 140°. The compression of the nostrils to stop epistaxis, is surely "ostrich" tactics. It is stated rightly enough that wounds about the wrist require that the ends of the cut tendons and nerves should be sought for and united, but no mention is made of the difficulty of the matter even to one with the necessary anatomical knowledge, and we do not think we are taking an unfair advantage of the author in picturing a parent, wild with

anxiety because his son has met with such an injury, and the doctor's coming is delayed, trying to do it himself. Should his son have been shot with some unknown weapon his anxieties are increased tenfold. He looks up the book and finds that if the wound has been inflicted by a gun he is not to probe it, but if by a toy pistol, then, no matter how deeply situated, all foreign matters must be removed. The two characteristics of injury to the abdominal viscera are said to be severe stabbing pain and profuse internal hæmorrhage. The emergency treatment of burns by white paint, and the statement that involvement of a large part of the body by sun-burn may prove fatal, are new to us. Attacks of epilepsy are described as not dangerous, the status epilepticus being ignored, and in the differential diagnosis between epilepsy and malingering the conjunctival reflex is not mentioned. The method advised to distinguish a poison bottle in the dark from that containing any other substance is distinctly original. It is "to pass several small pins transversely through the cork of the bottle so that the pointed ends project beyond the cork on the opposite side. On attempting to remove such a cork, a person will immediately become aware that he has not an ordinary bottle in his hands." Is it even probable that it would still be in his hands, and not in fragments on the floor after such an experiment? Again, two quarts of fluid forced into the stomach on a 5-foot head in a case of instant poisoning seems unnecessarily energetic, and we imagine that the Pasteur Institutes of India are still awaiting the "preventive serum" against rabies, the inoculation with which is described as the proper method of "later treatment." As regards the greater part of the book, the inaccuracies are so many and the indication of the difficulties and dangers inherent in many lines of treatment so conspicuous by its absence, that we regret we do not feel justified in recommending it. It is a pity, for the portion dealing with bandaging, poisoning, and removal of the injured are really good, and the illustrations, particularly those on bandaging, excellent and helpful.

Correspondence

THE USE OF QUININE IN PREGNANCY

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—Sometime ago a Civil Surgeon wrote to you asking for experiences of others on the practical question of the use of quinine in cases of malarial fever occurring in pregnant women, so far I have seen no reply, which is strange as it is a point on which many of us must have had experience. I here quote a paragraph from the *Berlin Klin. Wochenschrift* (Vol. XLIV, No. 5), which is of interest as regards the action of quinine on the pregnant uterus—

"Müller reports from Pfannenstiel's clinic 78 cases in which quinine was given during parturition to induce more energetic labour. In 61 cases the favourable influence of the quinine was unmistakable. It is entirely harmless for both mother and child, and proved exceptionally useful in promoting

labour pains in induced premature delivery and in treatment of abortion. The quinine seems to make the uterine musculature more sensitive to the action of the nerves. It failed to show any influence in 17 cases, probably either because the musculature was abnormally weak or the dose too large, paralyzing instead of stimulating. About 1 gm (15 grains) was given by the mouth and this dose repeated in two, four or five hours as the effect subsided. In very few cases was as much as 3 gm (45 grains) required. About 11 hours had been the previous minimum duration of induced premature delivery in the clinic with the hysterectomies. As a rule, 1 gm (15 grains) of quinine is given and, if no effect is observed, 0.5 gm after an hour and 0.5 gm half an hour later."

Yours, etc,
I M S

[Will some of our Medical Officers of Maternity Hospital in India give us their views on this practical point?—ED, I M G]

THE RADICAL TREATMENT OF HYDROCELE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I was interested in reading Dr. Fink's paper on the cure of hydrocele by eversion of the sac. Hydroceles of the tunica vaginalis seem to divide themselves for treatment into (a) those with thick walled sacs, (b) those with thin walled sacs.

For the former, tapping and injecting with iodine, carbolic acid or any other substance is I believe, absolutely useless, one has only to do a radical operation to realize the futility of expecting sufficient adhesions to form to cure hydroceles of this kind, the sac is more or less rigid and there is a large cavity.

I have had no experience of the method of introducing catgut into the sac.

The treatment therefore divides itself into the operation of excision of the prietal part of the tunica vaginalis, or eversion of the sac (Patt's operation).

I have until lately excised the sac but recently tried eversion. From a very limited experience of eversion it seems to offer several advantages over excision, viz., easier and quicker to perform, no hemorrhage to check, less after pain, and the ultimate result appears to be equally good.

In excision the time is taken up in stopping small oozing points in the cut surface of the thickened tunica, the complete checking of which, before returning the testicle to the scrotum, is the most important part of the operation. In eversion it appears to be advisable to put in a catgut suture at the neck of the everted sac to avoid the possibility of the sac reverting to its former position by any movement of the patient. I also put in a drainage tube in both excision and eversion for 24 hours.

After excision, I believe, instances have been recorded, although, no doubt, rare, of the formation of a serous sac resulting in a recurrence of the hydrocele. I do not know if there has been any instance of recurrence after eversion. For those with thin walled sacs, as patients are usually averse to anything more radical, I first try tapping and washing out the sac thoroughly with 1 in 20 carbolic lotion before withdrawing the cannula as much of the lotion as possible is expressed, there is very little pain, the carbolic acting as a local anesthetic.

It is impossible to estimate the percentage of cures by this method amongst hospital patients, those benefited rarely return. I have never seen any bad results such as sloughing of the scrotum, abscess, etc., which do sometimes occur after iodine injections.

I cannot see any advantage in iodine injection, it is useless in thick walled sacs, and in cases with thin walls it gives rise to a great deal more pain than either excision or eversion, the pain often lasting for days, it incapacitates the patient for as long a period as the radical operations with ultimately a slight prospect of cure or perhaps another injection.

Eversion seems to be the best treatment for thin walled hydroceles, but it remains to be proved whether, when compared over a long series of cases, it will be as successful as excision in those with very thick walls.

Perhaps some of your correspondents may be able to give a series of the two operations for comparison.

Hydrocele is common in Nepal, but the practice of tapping and injecting has been carried out for so many years that it is often difficult to get patients to submit to a radical operation.

Nepal, } Yours faithfully,
13th May 1907 } P CARR WHITE, M.B., F.R.C.S.,
MAJOR, I.M.S.

THE RADICAL TREATMENT OF HYDROCELE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—With reference to an article by Dr. Fink on radical cure of hydrocele by incision and eversion of the sac in the May number of the *Indian Medical Gazette* that officer is a little mistaken in his belief that this method of dealing with hydroceles has not been used in Burma before 1905.

Both Major Duer and myself operated on a large number of hydroceles in the above manner when at the Rangoon Hospital quite 10 years ago, and I believe that this method has given such satisfactory results that no reason has been found to alter it as a routine practice. I quite agree with what Dr. Fink has to say about the ease and satisfactoriness of the operation in a large majority of the cases. In the case of hydroceles with very thick and stiffened walls, however, the case is different. The question of dealing with this class of hydrocele is an open one and I should be glad of the experience of other operators. Personally I have found that whenever the sac of the hydrocele has been too thickened and stiff to fold up and lie comfortably amongst the other tissues of the scrotum that the best results have been obtained by removing it as completely as possible.

These thickened sacs are often badly nourished and I have seen them slough completely after they had been separated and everted.

As regards the operation I have found one stitch sufficient to keep the sac satisfactorily everted. At first I used not to put any stitch in, but I found one case in which the sac managed to resume its normal position and the hydrocele recurred. Since then I have used one catgut stitch posteriorly which has proved sufficient. This method of operating on hydroceles has proved so satisfactory and so simple in a large number of cases that I always perform it except in the case of patients with very thickened sacs.

Yours, etc,
C BARRY,
MAJOR, I.M.S.,
Civil Surgeon, Maymyo

THE RADICAL TREATMENT OF HYDROCELE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Dr. Fink writes enthusiastically in your May issue of the *Gazette*, about the eversion of sac method of radical cure of hydrocele. The enthusiasm is natural to any one who adopts this method after he had operated in the old ways. I first came to know of this operation from an article by Dr. Manmoh Lal in June 1901, and immediately took to it, seeing the great advantages it offered on the older methods. I wrote my first paper on the subject in September 1901 (published in the *Grant Medical College Magazine* of Bombay). There I discussed the disadvantages of the other methods and compared them to this new operation. I gave a few details of the operation as I noticed them in my cases, which may possibly differ from those in the original operation. I had done only seven operations then.

Subsequently I had a much larger number and wrote my second paper, also published in the *Grant Medical College Magazine* for March 1903, where I gave some more details from my further experience (60 cases) of the operation. All these were not done by myself but some by my Hospital Assistants under my supervision. Since that second paper, 54 more operations were done at the Jangra Memorial Hospital, Gwalior, while I had charge of it, up to October 1905, by myself, three other Assistant Surgeons, and 1 Hospital Assistant who were on duty at different periods. All of them were successful as to result, i.e., there was no mortality from any cause, as in the one case recorded by Dr. Fink. That death was evidently due to the ligature used in fixing the everted sac to the cord, which interfered with its circulation. Probably, on account of this unfortunate result, Dr. Fink recommends that 'it is preferable to form a loose collar round the cord by stitching the cut edges of the sac, one suture in front, and one behind the cord.' As I mentioned in my second paper this suturing is quite unnecessary. I used it but once, and that was in my very first case. I never used it again. I have seen other operators wishing to use it at their first operations. But my experience is that if the upper blind end of the sac is completely incised, there is absolutely no tendency to inversion, unless the sac be thick, or if the everted sac is allowed to be thick by superlying fascia, by not properly shelling it out. In the latter case, separation of the sac proper from the fascia (which really should have been done before) is sufficient to correct the tendency. In the former case if the sac is too thick, it had better be partially excised. For otherwise, although it is possible still to keep the thick everted sac in the scrotum without any suture, it leaves a heavy mass of large size which is inconvenient to the patient and for which indeed he sought relief.

Apart from thickness, partial excision of the sac is also required when the surface of the tunica is not quite healthy, e.g. friable or degenerated. In such cases, I have found it possible to scrape or to strip away a few layers in pieces (the unhealthy portion peels off), leaving healthy tunica behind, which unites very well after excision. In such partial excisions, there is liability to some bleeding, which must be stopped, if union by first intention be aimed at. This is a point which I brought out in my second paper, and which, as I have found out in the subsequent cases, is very liable to be overlooked. This leads to effusion of blood under the sutures with all its train of symptoms, thus falling short of

JULY, 1907]

the soundness of the result of excision method of operation. Occasionally even in ordinary cases some large vessels are cut and require ligation. In pythecia excision there are more bleeding points all of which must be stopped efficiently. I say "efficiently" because in a case operated on by my assistant I have seen the subsequent vomiting efforts of the patient bring on such bleeding that the sutures had to be taken off and the bleeding point secured. I also mentions "old i.e., syphilis" and a debilitated condition as a caution in operating. The state of the patient is a great factor in determining the extent of the excision.

Dr. Link mentions "old" i.e., syphilis and a debilitated constitution as indications for caution in operating the testicle in similar cases. After ascertaining the state of the cord and testicle I shall prefer to do a partial excision of the sac. It is old i.e. it is doubtful if any means an hydrocele is advisable in all for it is not by any means an operation of emergency and in old men with hydrocele had better be left alone or if the hydrocele is it all large and comes in the way of comfort it may be simply tipped. For a similar reason in a debilitated constitution radical cure is not called for, neither does syphilis give any special indications for the operation. The unfortunate result in Dr. Link's case was not due to any of these causes, it the testicle was found to be very diseased and cord felt soft and gelatinous, excision was advisable. I have had to do this in a case where after exciting the sac of a tight hydrocele and opening the left I found it to contain blood with the effusion of the sac enormous and testicle degenerated. Both were excised up with small incision.

relation, where after operation I found it necessary to
in a case where after operation I found it necessary to
and opening the left I found it necessary to
surface of the sacchous and I stuck the
the incision healed up well small incision
beside the above double operation is performed at the
same time in two other cases
In my second paper I mentioned four Hospital Assistants in my
operations were performed by Hospital Assistants in my
presence and here I would like to use a word to be done by
Civil Surgeons and Hospital Assistants After all it is
Assistant Surgeons and Hospital Assistants who with
the Assistant Surgeons and Hospital Assistants who with
the majority of the sick public and if they are allowed
chances of doing operations surgery will be resorted to more
widely than it is even now I was very fortunate in that
respect that the Javari Memorial Hospital (Gwalior) and I may
mention that after satisfying myself that the operation in
uncomplicated cases is perfectly safe I gave my Hospital
Assistants full opportunities to do the operation themselves
so much so that out of the 54 cases spoken of here is many as
were performed by them So that they can now undertake
this operation with confidence, in the district hospitals where
they get transferred This is possible because the operation
is ordinarily a common operation and I have demonstrated
it so and I have insisted upon the Hospital Assistants doing it
unaided
In my second paper I mentioned two interesting cases
of the hydroceles of the abdominal limbs which I
had the occasion of performing at the time recently

unaided. In my second paper I mentioned two interesting cases where the scrotal hydroceles had abdominal limbs which of course were not reached by the excision operation. At the inflammatory process in the lower limb of the tumor evidently spread to the upper limb and caused a painful swelling, which gradually subsided. Thus there was recovery under aseptic conditions. But what the result might be otherwise was illustrated by a case admitted to for a scrotal abscess. The patient was that three years back, he was hit on the right iliac region by his opponent in wrestling which caused swelling locally as well as in the scrotum. This gave no much pain till three months ago, when they began to increase as well as became more painful. Incisions were applied with some relief in the scrotum. A large swelling 5" vertically and 7" horizontally was seen above the groin on coughing and the umbilicus. An impulse would become more tense. On opening the lower abscess it was found to be a suppurated hydrocele communicating with the abdominal swelling which contained pus and sloughs. Free drainage was established but the man sank and died in 10 days.

All these were cases of circumscribed hydrocele even with abdominal lumps. But one of my cases was particularly interesting - a congenital hydrocele in which the tunica albuginea seemed to communicate with the general peritoneal cavity, into which the hydrocele could be thoroughly emptied by lying down or manual reduction, refilling on rising or on coughing. I performed the usual eversion, tying particular care for asepsis. The result was a success. The patient had been tipped twice outside, without any untoward result so that he must have been exceptionally lucky to escape infection which often follows careless tipping. Infection in such a case would most probably have been fatal.

On opening the cavity of hydroceles I have often found small warty excrescences on the tunica mostly over the testicle, but also on other places. They could be easily snipped away. Seeing them I have wondered whether such warts are to be found on the abdominal peritonium also. For it may be remembered that the tunica is but a sample of the general peritonium. In cases of general diseases of the peritonium, such as tubercle it may be interesting, to find out what the condition of the tunica may be, whether it corresponds to that of the general peritonium and if any correspondence

FOR HYDROCELE

is discoverable this may suggest a preliminary examination of the tunica which is quite safe as a routine measure before the abdomen is opened. I merely give it out as a suggestion to Surgeons, who may have frequent opportunities for abdominal section.

Yours etc.,
J. G. APPLEBY, L.M.S. (Bo)
Medical Officer
State

10th Mar 1907.

Yours etc,
Y G APPL, P A, LMS (Bo)
ASSISTANT MEDICAL OFFICER
Gwalior State

THE RADICAL TREATMENT OF HYDROCELL.
 The Editor of THE INDIAN MEDICAL GAZETTE.

THE RADICAL TREATMENT OF THE INDIAN MEDICAL GAZETTE.

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR—On all the operations for the radical cure of hydrocele that by incision and eversion of the sac has become, of late years, deservedly popular, partly on account of its simplicity and easiness of performance and partly owing to the uncertain results obtained by the old method of tapping and iodine injection.

My experience of this operation is limited to about fifty cases done by me during the last five years. Results in the whole satisfactory and encouraging. I have noticed, which

My experience of this operation is limited to about fifty cases treated by me during the last five years. Results in these cases have been on the whole satisfactory and encouraging. One or two points, however, I have noticed, which I mention before the profession.

My experience by me and my colleagues in these cases have been on the whole I have not met. One or two points however should like to lay before the profession. In the May number of the *Indian Medical Gazette*, Dr. Link claims the absence of haemorrhage as one of the advantages of this method. In some of my cases however, haemorrhage after the operation was noticed. In these cases the haemorrhage was of the commonest type acquired vaginal hydrocele and the operation performed was incision and eversion of the sac without even a parietal eversion, every care was taken to ensure that the external sac and the testicle were not replaced in the scrotum and the external wound not stitched until all oozing had entirely ceased. At the time of the first change of dressings the scrotum was sometimes found much distended on the side of the operation, so as to necessitate the re-opening of the wound to relieve tension by turning out blood clots.

In one of my cases the patient was a Chaambo Brahman at 32 years of exceptionally good health, a professional athlete, with no history of syphilis or any other constitutional taint. The hydrocoele was one-sided fairly large of five years' standing and it had been tipped from time to time. The operation was performed in the usual way, the sac much thickened was everted after being incised and kept so by two catgut stitches, no arterial spouting was noticed but general oozing from the cut edges in the incision was rather free and had to be stopped by pressure and the application of hot water, the testicle and the everted sac were replaced closed bleeding had stopped and the serosal wound was finally closed without a drainage tube being inserted. The wound healed by first intention. The patient was discharged from hospital on the 15th day after the operation, and beyond moderate painless swelling of the part nothing could be noticed at the time. He is advised to wear a suspensory bandage and avoid

He was advised to wear a suspensory bandage and avoid much walking. He returned to hospital after a fortnight. The scrotum now was found much distended, the patient was complaining of a feeling of tension and rather dull aching pain in the part. Careful questioning elicited that he had not walked at all while at home—had no 'fever'—and had received no blow. On typing there was but a partial escape of brownish yellow fluid, the cannula being blocked by debris of altered blood clots. The original wound was next opened and masses of fibrinous coagula removed. The cavity was then packed with sterilized iodoform gauze. The part healed without any further trouble in the course of two weeks. There has been no recurrence.

next opened and the sac was then picked with care. The patient was then picked with further trouble in the sac, but he died without any further recurrence.

There has been no recurrence of the sac, and there has been no recurrence of the sac, and there has been no recurrence of the sac.

A case like this brings to my mind the necessity of making provision for drainage for the first 15 hours at least, instead of closing the scrotal wound entirely. A piece of sterilized India rubber tubing inserted at the bottom of the wound the rest of which is closed would not I believe, interfere materially with the union of the put by first intention, provided it is removed by the third day or earlier than that when the dressings look dry. Apart from bleeding from the cut edges of the sac, the possibility of general oozing from the dilated capillaries in the serous membrane of the overted tunica owing to sudden relief of tension should not be overlooked. When the hydrocele is of moderate size and the sac does not show abnormal thickness, drainage may be dispensed with, as is ordinarily done but here, too I may be permitted to say that the insertion of a narrow strip of sterile gauze at the bottom of the wound (if removed at the end of the first 24 hours) is absolutely harmless.

W. J. C. W. Vost, M.S., Civil Surgeon, Muttra.

ordinarily done, and that the insertion of a drainage tube at the bottom of the wound (if removed at the 24 hours) is absolutely harmless.

Lieut. Colonel W. Voss M.S., Civil Surgeon, Muttra, insists on the necessity for drainage, particularly when dealing with a large hydrocoele with thickened tunica. It is his practice to keep the drainage tube for the first 24 hours and then to remove it.

In hospital practice at least, a large percentage of cases willing to undergo a cutting operation for the cure of hydro-

In hospital practice at least, a large percentage of cases willing to undergo a cutting operation for the cure of hydro-

cele are among those who have probably been giving patient trials to repeated tappings with or without irritant injections. In these cases the tunica will generally be found much thickened. I am led to believe, therefore, that adequate provision for drainage for the first two or three days is a necessity which ought not to be overlooked, although it may safely be dispensed with in suitable cases.

I have noticed a general oedematous condition of the scrotum following operation in a case where drainage had not been provided for. Sloughing of the loose cellular tissue inside the scrotum had followed. Recovery, however, was tedious.

The following case is interesting on account of the mental derangements which followed the operation—

The patient, a high caste Hindu, aged about 35 years, had hydrocele on both sides of ten years' duration.

At the time when operation was undertaken, the scrotum was found to be of enormous size, only the preputial opening of the penis was visible, erection of the organ was physically impossible during micturition urine trickled over the scrotum. There was no thickening of the skin as one meets with in a case of elephantiasis of this part. Tapping had been performed from time to time, but owing to the temporary character of the relief afforded, the patient got disgusted with it.

Incision and eversion were performed under usual anti-septic precautions. Both sides were operated on at one sitting. The tunica was found to be tough and abnormally thickened with calcareous patches on its inner aspect, on incising it free hæmorrhage ensued, which were controlled by deligation and torsion. The scrotal wounds were closed completely, no provision for drainage being kept.

On the fifth day after the operation, oedema of the scrotum was noticeable accompanied by rise of temperature which had hitherto remained normal. This continued—on the 10th day, stitches being removed, the wounds on both sides of the scrotum were found to have healed by first intention. The oedema of the scrotum became diffuse, and two abscesses formed at the most dependent parts, which had to be incised. The temperature lither to high fell to normal, but the patient developed signs of acute maniacal excitement, insomnia with delusions of persecution. With great difficulty he could be kept restrained. He used to be violent at times with apparent increase of muscular power. One day he jumped into the street from the verandah of his house several feet high, but fortunately escaped any serious injury.

Another symptom noticed was polyuria—constant passage of large quantities of pale urine of low specific gravity with no sugar or albumen in it.

This state lasted for about three weeks, but all the while the temperature was normal. Owing to constant dribbling of urine soiling the dressings, the abscesses took a long time to heal. The disappearance of the mental symptoms almost coincided with the improvements in the character of the wound. The patient ultimately recovered, convalescence being tardy.

This case is interesting on account of the peculiar mental derangement which followed. How far such a condition was due to septic absorption from the wounds or to some obscure nervous influence akin to what is sometimes noticed after ovariectomy or castration, I cannot surmise. In my belief, the condition of the wounds was not sufficient to account for the mental symptoms. I am sure that the testes were not injured in any way at the time of the operation, and that the abscesses which followed had no connection with them, but was due to absence of drainage. In fact relief of pressure after evacuation of hydrocele fluid led to oedema of the inner wall of the scrotum which the lymphatics were not able to dispose of.

What appears to happen in large hydroceles is this. Evacuation of the fluid leads to oedema of the inner wall of the scrotum. This oedema cuts off the blood supply, and hence arises sloughing of the loose cellular tissue surrounding the tunica vaginalis.

DISTRICT HOSPITAL,
MUTTRA

Yours, etc,
BANKIM C SANYAL,
Asst Surgeon

LIQ SODÆ CHLORINATÆ AS A DRESSING

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In your issue of April 1907 (p. 129), Assistant Surgeon A. C. Basu drew attention to a lotion composed of Liq Sodæ Chlorinatæ, with the request that the views of others be recorded as to its efficiency or otherwise.

I can thoroughly endorse the views of the writer. When House Surgeon at St Mary's Hospital, London, in 1904, in one ward of 12 beds I had about seven cases of appendix abscess under me. Now, as all know, the odour of appendicular pus is far from pleasant, so with the desire of rendering the dressing of these cases a somewhat less unpleasant task, I bothought me of Liq Sodæ Chlorinatæ.

The result of its use as a lotion exceeded my expectations, for not only was the offensive smell speedily transformed into one of clean smelling chlorine, but also the wounds as speedily assumed a healthy granulating appearance. Thenceforth Liq Sodæ Chlorinatæ was resorted to by me as a routine method of treatment in all appendicular cases needing drainage. In all such cases the wound, after an interval of about 24 hours after operation, was periodically syringed out with this lotion, and in cases needing it the cavity was plugged with gauze soaked in the lotion, and the wound covered with gauze similarly treated. Free nascent chlorine is liberated, speedily exterminating all species of bacterial growth.

This bactericidal action of chlorine had been most conclusively proved to me, some time previously, by a House Physician (now an officer in the I M S.), in some experiments on the sterilization of water.

Apart from this bactericidal action, the lotion has also, in my opinion, a marvellously stimulating reparative effect on the tissues, in fact out of death seemed to spring life.

MALAKAND,
1st May, 1907

Yours, etc,
J HAY BURGESS,
Captain, I M S

THE TREATMENT OF DYSENTERY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—My attention was drawn about three years ago to a specific remedy for acute dysentery while serving in the Mymensingh District Jail, to which I have given sufficient trial in dispensary and private practice, and as the results have invariably been satisfactory, I think they should have a further trial at the hands of others, and I believe the publication of my note in your much esteemed Journal will at least render help to those serving in my capacity in the Bengal jails, where there is ample opportunity to look to the progress and result thoroughly and correctly.

Out of 530 cases of dysentery treated in the Mymensingh Jail during a period of 23 months under the superintendent ship of Dr U N Mukherji, Lt Col, I M S (retired), there was only one death, and during the year 1906 there were 42 admissions in the Dumka District Jail, of which only two cases ended fatally. It is, however, superfluous to add that the deceased ones were unfortunately admitted into jail with very advanced ages, previously suffering from some sort of chronic affection.

Nearly all the cases were uniformly treated as follows—

$\frac{1}{2}$ to $\frac{1}{3}$ grain of subchloride of mercury along with $\frac{1}{2}$ to 2 grains of bicarbonate of soda, B P, for a single dose, 4 to 8 times daily, sometimes oftener, is enough to combat the malady. Troublesome symptoms usually subside within 48 to 96 hours. The treatment is often to be supplemented by 4 ounces of the pulp of the roasted unripe Bael fruit, once every morning in order to obtain effect more quickly.

Amongst the auxiliary measures that deserve mention, are (1) rest, (2) wrapping the abdomen well with some warm cloth or belt, (3) embrocation of the affected region and right hypochondrium, with a liniment composed of pure mustard oil with equal part of turpentine oil at least twice daily, (4) application of linseed poultice over the left iliac region in cases of severe griping and tenesmus.

The treatment should be continued so long as acute symptoms prevail and there is mucus and blood noticed in the stools.

There is one accident occasionally arising out of the treatment—Ptyalism (gum affections). This can easily be obviated by discontinuing mercury and prescribing in the following manner, giving some gristle for the mouth complaint—

Pulv Ipecac	grain $\frac{1}{2}$
Bismuth Subnitras	grains 5
Sodi, Bicarb	" 5
Salol	" 10

To make one pulv 4 times daily

When acute symptoms entirely disappear, and nothing but bile is noticed in the stools, the following will prove very much effective—

Pulv Ipecac Co	grains 5
Sodi, Bicarb	" 5
Bismuth Subnitras	" 5

To make a pulv 4 such doses daily

In convalescent state, some non tonic is commendable. Dietary—I cannot conclude without making a passing remark as regards "dieting the patient." Ordinarily sago mixed up with "dahi" and sugar, or barley and arrowroot water is enough for first few days, while after with the progress of the disease, more nourishment may be needed. Stimulants may not be required in 99 per cent cases. I have derived marvellous effects from a special mode of

preparation, named "*Mardhar*," formerly used in the Alipuri Central Jail under Major Buchanan, I M S (now Inspector General of Prisons, Bengal). It is chiefly composed of old fine rice three parts and water one part, stirred to form a thick, starchy, pulpy paste (mucilaginous), then strained through muslin, and given to the patient 2 or 4 times a day, adding each time 2 chittacks of "*dahi*" (curd), or 3 chittacks of whey (ghole) with a little quantity of sugar or salt to the paste according to its needs. This proved to be very soothing and to possess some nutritive property.

PREVENTION

Among others the following points should always be considered very important in removing jail dysentery and diarrhoea—

- 1 Close and systematic supervision of prisoners' rations (raw) and prepared food (cooked)
- 2 Proper and timely serving of freshly prepared warm rice, free from flies and dust
- 3 Immediate admission of the sufferers to the hospital
- 4 Even malingering cases ought to be placed under observation at least for 24 hours
- 5 Complete isolation
- 6 Strict and regular observation of the patients' stools
- 7 Immediate incineration of the stools (sick)
- 8 Disinfection of soiled bedding and clothing and then separate storage
- 9 Retention of the sick in the hospital for some days even after convalescence
- 10 Liberal issue of "*dahi*" (when procurable from the jail) to all prisoners in lieu of "*dal*," as prescribed in the Jail Code, especially during summer

One important point I have missed to mention. On the onset a dose of castor oil may be administered in selected cases according to age. Sometimes slight pyrexia adds to the difficulty that may be overcome by prescribing thus, along with the "*specific*" powder mentioned before.

The special feature of the treatment is that it can be used in all cases, without minding the age or state of health. Mercury is, of course, contraindicated in cachectic and anemic patients, but the little harm done by it may be compensated by the result obtained by its administration. Besides it is less expensive, more certain and quickly effective. Bael, according to the "*Therapeutics*," is an "*aperient*," so it seems to counteract the cumulative action of mercury to some extent. For gum affections, as said before, suspension of mercury for some days, and administration of some astringent gargle will be sufficient.

I am, Sir,

Yours, etc.,

SATKARI GANGOPADHYA,

CIVIL HOSPITAL ASSISTANT,

In charge of the Dumka Jail Hospital, S P

P S—I must thank Dr. R. Brown, Civil Surgeon of Sonthal Parganas, for his kind permission for making the experiment in the Dumka Jail, and Dr. U N Mukherji, late Civil Surgeon of Mymensingh, from whom I first got the idea.

THE INDIAN MEDICAL SERVICE

By D G CRAWFORD, M B,

LIEUT. COLONEL, I M S,

Civil Surgeon, Hooghly

(Continued from page 238)

10 Honours and Rewards—

It has sometimes been alleged that the number of Honours and Decorations bestowed upon officers of the I M S is small. The following table shows that members of the service, on the active list or retired, have been the recipients of close upon 200 decorations. The larger share, nearly two thirds of the whole, have gone to Bengal, but that service has always been stronger in numbers than the other two together. The new I M S, composed of men entering the service in 1897 and subsequent years, has done well in earning three D S O's, all by war service, in the first few years of its existence. For such decorations usually go to the senior men. It is curious that the Bombay service, always much smaller in numbers than Madras, has gained nine decorations. A Bombay officer was the first to earn the V C, another held the only G C B, yet bestowed upon the I M S. It is probable that some

Honours and Orders have been omitted, especially in the Madras and Bombay services, certainly all those entered in the table have been given and received. Various other distinctions, Honorary Physicianships and Surgeoncies to the King, Honorary degrees of Universities, Fellowships of the Royal Society, Baronetcies, Knight-hoods, and Good Service Pensions, are also entered in the tables, but not included in the total of nearly 200 decorations. These distinctions number 152—

Order	Bengal	Madras	Bombay	I M S	TOTAL
V C	1		1		2
G C B			1		1
K C B	5	3			8
C B	27	8	6		41
K C S I	5				5
C S I	10	3			14
K C I E	3		2		5
C I E	25	11	7		43
K C M G			1		1
C M G	3				3
D S O	10	1	2	3	16
K C V O	2		1		3
K I H	9	1	7		17
Privy Counsellor	1		1		2
Miscellaneous foreign Orders	14	8	8		30
TOTAL	115	35	38	3	191
Baronetcies	2				2
Knight-hoods	6		1		10
K H S	9	5	5		19
K H P	11	5	3		19
Good Service Pensions	27	7	6		39
F R S	25	4	3		32
L L D	17	4	9		30

Only twice has the much coveted Victoria Cross been won by officers of the I M S, the first time by J Crimmin of Bombay, in Burma, on 17th September 1889, the other by H F Whitechurch, of Bengal, at Chitral, on 16th July 1895. In this respect, at least the I M S cannot come into competition with the R A M C, the number of Crosses earned by the Medical Department of the army being higher in proportion than in any other branch. It may be mentioned that a boy in the Bengal Subordinate Medical Department, Hospital Apprentice, Arthur Fitz Gibbon won the Cross in the second China war, for gallantry at the capture of North Taku Fort on 21st August 1860.

It is true that the most open path to honours has always been military and political service, next to that, scientific distinction. It is hard to judge of pure professional work. It is not necessarily the man who shows most prominently in the public eye, who is doing the best work. Still, many honours and distinctions have been bestowed for purely professional science and merit, *eg*, the Knight-hoods conferred on Whitelaw Ainslie, Annesley, and Ranald Martin, the C B to Ranald Martin, and the C I E's to Murehead, Waring, and Chevers, not to come to more recent times.

The first instance of a British order being bestowed on an officer of the I M S appears to be the Civil G C B conferred on Sir John Macneil in 1839. The same officer had previously received the first class of the Persian order of the Lion and Sun in March 1836. John Cormick, of the Madras service, had received the second class of the same Order in 1825. And Sir Thomas Sevestre, of the Madras service, got the Portuguese Order of the Tower and Sword in 1816.

The first honour of any sort conferred on an officer of the I M S seems to have been the Knight-hood granted to Sir Bussick Harwood in 1806, but this was given because he had for long been Professor of Anatomy and Medicine at Cambridge, not for his service in Bengal. Sir William Russell was created a Baronet on 18th February 1832, soon after his retirement from Bengal,

for his services in the cholera epidemic of 1830 in London. Sir George Campbell, late of the Bengal service, was knighted on 5th March 1832, for services as a County Magistrate in Fife, after retirement. Knight hoods were bestowed on three officers of the Madras service, Whitelaw Ainslie on 10th June 1835, Simon Heward on 5th June 1837, and James Annesley on 13th May 1844, on Ainslie and Annesley for professional work, on Heward for his services as Superintending Surgeon in the first Burmese war of 1824-25.

Officers of the Medical and Commissariat Departments were first made eligible for the Military Division of the Order of the Bath by the Royal Warrant of 16th August 1850. From this date K. C. B.'s were bestowed on the following medical officers—Sir James McGrigor, *Bart.*, Director General of the A. M. D., Sir William Burnett, Knight, Director General, Medical Department, R. N. James Thomson, Inspector General of Hospitals, Bengal. Seventeen medical officers also received the C. B., including Inspector General J. Wylie, Madras.

Superintending Surgeon Charles Renny, Bengal

" " B. W. Macleod, "

" " C. D. Straker, Bombay

Mention in Despatches—Sir James McGrigor, Principal Medical Officer with Wellington in the Peninsula, and afterwards for many years Director General of the A. M. D., mentions in his autobiography (p. 278 and appendix E, p. 412), that he obtained for medical officers the honour of mention in despatches, for the first time, after the siege of Badajoz, which was stormed on the night of 6th April 1812. He states that he asked Wellington to mention the services of the medical officers. Wellington asked him if this was usual, and he had to admit that it had not been done before. Wellington, however, after consideration, thought fit to do it, and in his despatch reporting the capture of Badajoz, mentions the services of the Medical Department, "Mr McGrigor, Inspector General of Hospitals, and the medical gentlemen under his direction." This, no doubt, was the first time that the honour of mention in despatches had been accorded to medical officers of the British Army. Such mention had, however, been made at an earlier date in India. In a despatch from Lieutenant Colonel Keating, reporting the capture of the Island of Banbon, dated 21st July 1810, and published in the *London Gazette* of 25th October 1810, among the officers mentioned by name are Superintending Surgeon Harris, of Madras, and Surgeon Davis, of the Bombay Army.

(To be continued)

Service Notes

THE following questions, asked at an examination for the diploma in Tropical Medicine held some time ago in Liverpool, are sent us by a senior I.M.S. officer who has taken this diploma, as well as many other degrees. They will be of interest to all who contemplate taking this diploma, either in Liverpool or London—

TROPICAL MEDICINE

1 Describe Asiatic cholera, as to its etiology, mode of dissemination, prophylaxis, pathology, symptoms and treatment.

2 Describe bacillary dysentery, as to its etiology, morbid anatomy, symptoms, and treatment.

3 What are the commonest causes, signs, symptoms, and mode of treatment of tropical abscess of the liver?

4 Give briefly the special features of epithelial keratosis of the conjunctiva as seen in the tropics. Mention its relations with affections of other mucous membranes, with so-called parenchymatous keratosis of the conjunctiva, and with Phlegethenar ophthalmia.

TROPICAL SANITATION AND HYGIENE

1 Having in view the recent work on the vitality of bacillus typhosus in soil, describe the best method for

disposal of excreta under the varying conditions which obtain in tropical countries.

2 What are the principal points to be remembered in constructing drains for the houses and streets of a native town or village?

3 What measures would you adopt against malaria during the construction of a canal by a large body of workmen in the tropics?

TROPICAL PATHOLOGY, BACTERIOLOGY AND PARASITOLOGY

1 Describe the *post mortem* appearances in a case of sleeping sickness, with special reference to the brain and lymphatic glands. Describe the morphological characters of the *Trypanosoma gambiense*. How may it be cultivated in artificial media? How is the disease transmitted to man? What is known of the life history of the parasite in the natural state outside the human body?

2 Describe the *post mortem* appearances met with in Malaria fever. Describe the morphological characters of the *Plasmodium melitensis*. Where is it found in the human body? Describe its cultural characteristics in various media. What is the optimum temperature? What is known with regard to its occurrence in urine, milk, blood, and soil?

3 How would you prove that a malaria-bearing mosquito infects man with malarial fever?

PRACTICAL EXAMINATION IN LABORATORY

Dissect out the salivary glands of the mosquito on your bench. At the Oral Examination one candidate was asked to identify several mosquitoes (mounted in tubes) shown him, amongst them (1) *Anopheles gambiae*, (2) *Stegomyia fasciata*, (3) *Aedes aegypti*, and asked their characteristics.

The following specimens were under microscopes for identification—

1 *Flagellated microgamete*—Is it a male or female? What are the distinguishing characters between male and female gametes when stained with Romanowsky? Why is female of a deeper blue? Why is it more granular?

2 *Plasmodium hominis*—Where is it found? How does infection occur? What are the symptoms of this fever? What is its case mortality? What disease does it resemble?

3 *Lishmania donovani* (an excellent specimen from a spleen smear). What is it? What origin is it from? Is it found in the peripheral blood?

4 *Trypanosoma gambiense*—Where is it found in the human body during life? What animals have been successfully infected? Is it always present in the peripheral circulation?

5 *Lobules of Salivary gland of Anopheles mosquito, with sporozoites all over the field*—Describe the development of sporozoites. Does any part of the sexual cycle occur in man? When do sporozoites reach the salivary gland?

At the clinical examination one candidate was given a case of Malignant tertian fever in a sailor who had been up to Benin, on the West Coast of Africa, and in whom the only signs of the disease left were trifling enlargement of the spleen and some anemia. The blood examination was negative. The examiner asked the candidate to describe the different varieties of malarial parasites met with in quinine, simple and malignant tertian. What form is met with in the peripheral blood in malignant tertian? Where is the mature asexual (sporulating) form found? Is there anything noteworthy about the white blood cells? In what other general infective animal prismatic disease does this occur?

IN a recent note on "An Indian Civil Surgeon" in the *Caledonian Medical Journal* (April 1907) Colonel Kenneth Macleod, M.D., I.M.S. (retired), gives a pleasant and interesting account of his work as a Civil Surgeon in Jessore and Jalpurguri in 1866-69. We note the following introductory remarks—

"There is no position in the world in which a medical man is invested with heavier responsibilities or enjoys better and more varied opportunities of performing useful professional work than an Indian civil surgeon. The medical charge of a civil station and district includes a wide area and large population, and implies sanitary and medical duties of every description. The civil surgeon is supreme in his own department, subject nominally to the civil authorities of the district and various departmental officials. He is the head of all State supported and aided medical institutions, and the adviser on all questions affecting public health. His functions are partly administrative and partly executive, he practises his profession in all its branches and supervises and controls the practice of numerous subordinates. Officially he acts in accordance with regulations, rules, and orders, and regarding these he may make reference to official superiors, some of whom are on the spot and others pay an occasional visit of inspection. He is the source and medium of information concerning all sanitary and medical matters appertaining to his charge. Professionally he is thrown on his own resources, and with the exception of periodicals and books he has no

means of discussing medical questions or solving doubts and difficulties, and has seldom, if ever, the opportunity of consulting with other medical men. Being a man of intelligence and culture, he takes a high place in his microcosm, and is frequently called upon to perform functions outside of his profession."

COLONEL R MACRAE, M B (Edin), I M S, Inspector General of Civil Hospitals, Bengal, has been appointed to be an Honorary Surgeon on the personal staff of H E the Viceroy, *vice* Colonel S H Browne, M D, C I E, retired.

LIEUTENANT COLONEL H R WOOLBERT, I M S, an Agency Surgeon of the 2nd class, and Civil Surgeon, Ajmer, is granted privilege leave for three months, with effect from the 19th March 1907, combined with furlough for one year and six months, under Articles 233 and 308 (b) of the Civil Service Regulations.

CAPTAIN H GROSSE, I M S, an officiating Agency Surgeon of the 2nd class, and officiating Consular Surgeon, Arabistan and Kermanshah, is granted privilege leave for three months and fifteen days, under Articles 246, 260 and exception to Article 251 of the Civil Service Regulations with effect from the 16th June 1907, on the subsequent date on which he may avail himself of the leave.

THE following appointment and reversion is ordered in the Medical Department, Burma—

On his return from leave Major C C S Barry, I M S, is transferred from Maymyo and was appointed to officiate as Civil Surgeon, Rangoon, during the absence on leave of Lieutenant-Colonel R E S Davis, M B, I M S.

On relief by Major Barry, Major J Penny, D P H, I M S, reverted to the post of Junior Civil Surgeon, Rangoon.

LIEUTENANT COLONEL A R P RUSSELL, I M S, has been granted by His Majesty's Secretary of State for India an extension of leave on medical certificate for four months.

UNDER the provisions of Articles 260, 233 and 311 of the Civil Service Regulations, privilege leave for twenty days combined with furlough on medical certificate for eight months and five days within and out of India, is granted to Lieutenant Colonel R E S Davis, M B, I M S, in continuation of the privilege leave granted to him in General Department Notification No 774, dated the 14th December 1906.

MAJOR S A HARRIS, I M S, whose services have been placed temporarily at the disposal of the Government of the United Provinces by the Government of India, to officiate as Civil Surgeon, Budaun.

CAPTAIN C A SPRAWSON, I M S, whose services have been placed temporarily at the disposal of the Government of the United Provinces by the Government of India, to officiate as Civil Surgeon, Jhansi.

CAPTAIN J C S OATLY, I M S, Civil Surgeon, Seoni, C P., has been granted six weeks' privilege leave from 20th May 1907.

ON return from leave Major C H Bowle Evans, I M S, resumed his appointment as Civil Surgeon, Hazara.

LIEUTENANT COLONEL O H CHANNER, I M S, is permitted to retire from 15th April 1907. Colonel Channer entered the Bombay service in September 1876, and has for some years past been Sanitary Commissioner, Bombay.

CAPTAIN SPITTLER, I M S, and Captain G F Serly, I M S, have passed in Pashtu by the Higher Standard.

MAJOR F C MACLEOD, I M S, Civil Surgeon, Kamrup, is granted privilege leave for three months, under Article 260 of the Civil Service Regulations, combined with study leave for nine months, with effect from the date on which he may be relieved of his present duties.

MILITARY ASSISTANT SURGEON F G HURST, is appointed to officiate as Civil Surgeon, Lushai Hills.

ON the departure of Surgeon General Bomford, C I E, on short leave, Colonel D Wilkie, I M S, is appointed to officiate as Director General, Indian Medical Service.

LIEUTENANT COLONEL J SYKES, I M S, who only returned from leave in October last, has again gone on six months' special leave on urgent private affairs.

MAJOR J K CLOSE, I M S, has gone to Bareilly, to act as Civil Surgeon, *vice* Lieutenant Colonel Sykes.

ON return from special duty with the Factory Commission, Lieutenant Colonel J F MacLaran, I M S, reverts to Allahabad as Civil Surgeon.

CAPTAIN J W LITTLE, I M S, took over the Civil Medical duties of Deira Ismail Khan, on 3rd April, relieving Major A Moorhead, I M S.

CAPTAIN J R J TITRELL, I M S, has gone to England on eight months' furlough (M C).

HIS Excellency the Governor of Bombay in Council is pleased to appoint Major P P Kilkelly, M B, I M S, to act as Ophthalmic Surgeon, I J Hospital, *vice* Lieutenant Colonel H Herbert, F R C S, I M S, proceeding on leave, pending further orders.

CAPTAIN H A F KNAPTON, I M S, is granted, from the date of relief, such privilege leave as may be due to him on that date in combination with furlough on medical certificate for nine months.

HIS Excellency the Governor of Bombay in Council is pleased to appoint Lieutenant Colonel B B Grayfoot, M D, I M S, to act as Deputy Sanitary Commissioner, Sind Registration District, in addition to his own duties, *vice* Captain H A F Knapton, I M S, proceeding on leave, pending further orders.

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments—

Lieutenant Colonel T E Dyson, M B, C M, D P H, I M S, to be Sanitary Commissioner for the Government of Bombay, *vice* Lieutenant Colonel O H Channer, M B, C M (Ed), D P H, I M S, retiring.

Captain G McPherson, M B, I M S, to act as Deputy Sanitary Commissioner for the Central Registration District, in addition to his own duties, *vice* Lieutenant Colonel T E Dyson, I M S, pending further orders.

CAPTAIN W M ANDERSON, I M S, Assistant Surgeon A W Dyer, Assistant Surgeon R Keelan, Assistant Surgeon N S Williams and Assistant-Surgeon T Traynor, have passed the Higher Standard examination in Pashtu.

LIEUTENANT COLONEL C S RUNDLE, M B, I M S, has been permitted to retire from 6th May 1907. He entered the service in March 1880 and has been in Civil Employ, Burma, for many years. He took leave out of India for 2 years on 5th May 1905.

THE following Majors are promoted to be Lieutenant Colonels, I M S, from 31st March 1907—

Charles Hardwick Louw Meyer, M D
William Henry Wilson Elliot, M B, D S O
Letterstedt Frederick Childe, M B
William Ronaldson Clark, M B
George Frederick William Braid
Robert John Marks
Charles Edward Sunder, M B
Malcolm Albert Ker
Herbert Herbert, F R C S
Thomas David Collis Barry
Andrew Buchanan
Lewis Gordon Fischer
William Vost, M B
John Gaiye, M B
Clarence Edwin Lloyd Gilbert
Gerard Beatty Irvine
Frederick James Crawford, M D
Robert Robertson, M B

LIEUTENANT COLONEL E W REILLY, I M S, was granted combined leave for 10 months and 25 days, with effect from 23rd August 1906. This cancels order No 1492 of 30th October 1906.

MAJOR D W SUTHERLAND, M D, I M S, Professor of Medicine, Lahore Medical College, is appointed to officiate as Principal of that College in addition to his own duties, with effect from the forenoon of the 1st of April 1907, *vice* Lieutenant Colonel F F Perry, F R C S, I M S, proceeding on leave.

ON the termination of his special duty in the Mayo Hospital, Lahore, Major E V Hugo, M D, F R C S, I M S, Civil Surgeon, is appointed to officiate as Professor of Surgery in the Lahore Medical College, with effect from the forenoon of the 1st April 1907, *vice* Lieutenant Colonel F F Perry, F R C S, I M S, proceeding on leave.

CAPTAIN E L WARD, I M S, Superintendent, Central Jail, Multan, has obtained privilege leave of absence for 1 month and 19 days combined with furlough for 1 year, 3 months and 11 days, under articles 260, 233 and 308 (b) (iv) (2) of the Civil Service Regulations, and study leave for 7 months under the Regulation regarding the grant of study leave to officers of the Indian Medical Service, with effect from the 22nd of April 1907, or the subsequent date from which he may avail himself of it

LIEUTENANT COLONEL S LITTLE, I M S, Civil Surgeon, Rawalpindi, has obtained privilege leave for 26 days and furlough on medical certificate for 1 year, 5 months and 4 days in continuation thereof, under Articles 260, 233 and 308 (a) of the Civil Service Regulations, with effect from the 22nd of April 1907, or the subsequent date from which he may avail himself of it

CAPTAIN A G MCKENDRICK, M B, I M S, has been granted combined leave out of India for 7 months, with effect from 13th April 1907

THE services of Captain J H Murray, I M S, are placed at the disposal, temporarily, of the Punjab for employment in the Jail Department

LIEUTENANT COLONEL H N V HARRINGTON, I M S (Madras), an Agency Surgeon of the 1st class, is appointed to be Residency Surgeon and Chief Medical Officer in Rajputana, with effect from the 19th March 1907

LIEUTENANT COLONEL HARRINGTON is appointed to hold charge of the current duties of the office of Residency Surgeon in the Western States of Rajputana, in addition to his own duties, with effect from the 19th March 1907, and until further orders

CAPTAIN L J M DEAS, I M S, an officiating Agency Surgeon of the 2nd class, is posted temporarily as Civil Surgeon of Ajmer

CAPTAIN I H HUGO, D S O, I M S (Bengal), an Agency Surgeon of the 2nd class, is posted on return from furlough as Civil Surgeon of Miran Shah

MAJOR LEONARD ROGERS, F R C I, F R C S, I M S, delivered the Introductory Lecture at the Summer Session of the West London Hospital his subject being "the Clinical Differentiation of Fevers in the Tropics"

LIEUTENANT COLONEL C H L MEYER, M D, B S, I M S, is granted, from the date of relief, privilege leave of absence for three months in combination with furlough, the total period to expire on the 2nd January 1908

MAJOR F H WATLING, I M S, Civil Surgeon, Bilaspur, C P, was granted privilege leave for four weeks from 1st June 1907

MAJOR A E BERRY, I M S, is appointed to the Medical Charge, 27th Light Cavalry, *vice* Lieutenant Colonel Younger man, retired

CAPTAIN E A WALKER, I M S, has been appointed Medical Officer of the Cooch Behar State, Bengal

CAPTAIN J H MURRAY, I M S, whose services have been placed temporarily at the disposal of the Punjab Government by the Government of India in the Home Department for employment in the Jail Department, is appointed to officiate as Superintendent of the Multan Central Jail, with effect from the afternoon of the 23rd of April 1907, *vice* Captain E L Ward, I M S, proceeding on leave

MAJOR W YOUNG, I M S, was on study leave from 27th November 1906 to 30th March 1907

CAPTAIN W H. KENRICK, I M S, has obtained the Diploma in Tropical Medicine of Liverpool University

ON return from leave Military Asst Surgeon F G Fox officiated as Civil Surgeon, Banda, U. P.

DR D L HENDLEY acts as Protector of Emigrants, Calcutta, during the absence on seven months' combined leave of Dr C Banks

MILITARY ASSISTANT SURGEON J J A BRACHIO acts as Civil Surgeon of Daltongunge, *vice* Dr Hendley

LIEUTENANT COLONEL SIR R HAVELOCK CHARLES, I M S, has been appointed by the King to the consulting staff of the Osborne College and has been put on the Committee of King Edward's Fund. He has also succeeded Surgeon Major Macnamara to look after the surgical equipment ordered through the India Office

THE following transfers, postings and appointments were ordered in the Medical Department, Burma —

Captain A W Greig, I M S, is transferred from Mandalay and is posted to the charge of the Rangoon Central Jail, in place of Captain M Dick, I M S, transferred

On relief by Captain Greig, Captain M Dick, I M S, is posted to the Civil medical charge of the Toungoo District, in place of Captain F V O Beit, M B, I M S, transferred

On relief by Captain Dick, Captain F V O Beit, M B, I M S, is posted to the Civil Surgeoncy at Maymyo, in place of Major C C S Barry, I M S, transferred

Captain A Whitmore, M B, I M S, is transferred from Rangoon and is appointed to the Civil medical charge of the Magwe District as a temporary measure, in place of Captain H H G Knapp, M B, I M S, transferred

On relief by Captain A Whitmore, Captain H H G Knapp, M B, I M S, is appointed to be the Superintendent of the Mandalay Central Jail, in place of Captain A W Greig, I M S, transferred

CAPTAIN H D PHEIF, I M S, Superintendent, Central Prison Fatehgarh, was granted three months' privilege leave from 21st May 1907

MAJOR I G HUIBERT, I M S, Civil Surgeon, acts for Captain Peile, in addition to his own duties

CAPTAIN G A K H RFFD, R A M C, acted temporarily as Civil Surgeon, Saugor, in addition to his own duties from 20th April

HIS Excellency the Governor in Council is pleased to make the following appointments during the absence on leave of Lieutenant Colonel J Crimmin, V C, C I F, I M S, or pending further orders —

Major W F Jennings, M D, D P H, I M S, to act as Health Officer of the Port of Bombay

Major T Jackson, M B, B S, I M S, to act as Civil Surgeon and Superintendent, Byramji Jyibhai Medical School and Lunatic Asylum, Ahmedabad

LIEUTENANT C J COPPINGER, M B, I M S, to act as Medical Officer to the Kathiawar Political Agency, and in charge of the West Hospital, Rajkot, in addition to his own duties, as a temporary measure

LIEUTENANT COLONEL W H BURKE, M B, I M S, has been allowed by His Majesty's Secretary of State for India an extension of furlough for one day

LIEUTENANT COLONEL W H BURKE, M B, I M S, has been allowed by His Majesty's Secretary of State for India to return to duty within the period of his leave

THE services of Captain D P Goll, M B, I M S, are placed at the disposal temporarily of the Government of Eastern Bengal and Assam

ON return from leave Lieutenant Colonel R Shore, I M S, is posted as Residency Surgeon, Western States of Rajputana

THE following notifications appeared in the Punjab Gazette —

Major G B Irvine, I M S, is appointed Civil Surgeon of Jhelum, with effect from the forenoon of the 1st of April 1907, *vice* Captain D H F Cowin, I M S

On being relieved of the duties of Officiating Civil Surgeon of Jhelum, Captain D H F Cowin, I M S, is appointed to officiate as Civil Surgeon of Murree, with effect from the forenoon of the 6th of April 1907

On return from leave Major E Wilkinson, I M S, reported his arrival at Bombay on the afternoon of the 2nd of April 1907, and resumed charge of his duties as Deputy Sanitary Commissioner, Punjab, on the forenoon of the 4th idem, relieving Captain H M Mackenzie, I M S, transferred

On transfer from Gurdaspur Major E S Peck, I M S, assumed charge of the duties of Civil Surgeon of Dalhousie on the afternoon of the 7th of April 1907

LIEUTENANT COLONEL F J DRURY, I M S, made over charge of the Howrah Jail to Major J T Calvert, I M S, on the forenoon of the 8th April 1907

CIVIL SURGEON J L HENDLEY made over charge of the Daltonganj Jail to Military Assistant Surgeon J J A Blachio on the forenoon of the 13th April 1907

THE following paper appointments are gazetted —
Captain V E H Lindesay, I M S, second class Civil Surgeon, on leave, is appointed to be Resident Surgeon, Medical College Hospital, Calcutta

MAJOR B R CHATTERTON, I M S, Deputy Sanitary Commissioner, Bihar and Chota Nagpur Circle, at present officiating as a second class Civil Surgeon and stationed at Serampore is confirmed as a Civil Surgeon of the second class, vice Captain V E H Lindesay, I M S

CAPTAIN W C ROSS, I M S, Officiating Deputy Sanitary Commissioner, Bihar and Chota Nagpur Circle is confirmed in that appointment, vice Major B R Chatterton, I M S

CAPTAIN W S J SHAW, M B, I M S, whose services have been placed at the disposal of the Government of Burma, is appointed to be Superintendent of the Lunatic Asylum, Rangoon, in place of Captain H A Williams, M B, D S O, I M S, proceeding on leave

CAPTAIN J N WALKER, I M S, Civil Surgeon, Azamgarh, U P, has been granted 18 months' combined leave from 11th April 1907

DURING the absence of Lieutenant Colonel J Anderson, I M S, Lieutenant-Colonel J J Pratt, I M S, officiates as a Civil Surgeon of the first class

CAPTAIN J W SUMNER, I M S, took over the civil medical duties of Bannu District on 15th April 1907, relieving Capt H Boulton, I M S

CAPTAIN W G HAMILTON, I M S, has joined the Bengal Jail Department and has been posted as Superintendent, Central Jail, Bhagalpur, vice Captain J M Woolley, I M S, on leave

CAPTAIN H M MACKENZIE, I M S, is appointed Health Officer of Simla

CAPTAIN W GLEN LISTON, I M S, of the Plague Commission, is granted three months' privilege leave from 6th June 1907

MAJOR C R STEVENS, F R C S, M D (Lond), acts as Professor of Anatomy, Calcutta Medical College, pending further orders, vice Major Mon, deceased, and Major A Gwyther, I M S, is posted to Cuttack and Captain L Cook to Chupra

CAPTAIN V E H LINDESAY, I M S, a Civil Surgeon, Bengal, has been granted four months' extension of leave (m c)

MAJOR CHARLES LOUIS WILLIAMS, M D, I M S, Madras, has been permitted by the Secretary of State for India to retire from the service, subject to His Majesty's approval, with effect from the 19th March 1907

Major Williams went home on six months' combined leave on 21st September 1906. He entered the service in September 1889, and has therefore earned the 17 years' pension

LIEUTENANT GILL entered the service in July 1902, and was placed on temporary half pay on 27th March 1905

LIEUTENANT JOHN HENRY GILL, M B, I M S, has been transferred by the Secretary of State for India to the permanent half pay list, subject to His Majesty's approval, with effect from the 27th March 1907

CAPTAIN HAROLD BUDGET MEAKIN, M D, I M S, has been transferred by the Secretary of State for India to the temporary half pay list, subject to His Majesty's approval, with effect from the 23rd March 1907

CAPTAIN H B MEAKIN, M D, I M S entered the service in July 1898. He was in civil employ, Bengal, for some time, then went home sick, came out again, was appointed Medical Officer, 2nd Lancers, and again had to take leave

CAPTAIN A MILLER, I M S, was due back from leave on 10th June, and Captain F D S FAYRE, I M S, in November 1907

CAPTAIN F C ROGERS, I M S obtained 16 months' combined and study leave from 18th February 1907

CAPTAIN F POWER CONNOR, I M S, is appointed Resident Surgeon, Calcutta Medical College Hospital

CAPTAIN P L O'NEIL, I M S, District Medical Officer, Cuddapah, has applied for eight months' combined leave

CAPTAIN S R CHRISTOPHERS, I M S, obtains two months privilege leave from 1st May

THE following is an abstract of the number of I M S men in the Civil Medical Department, Madras, on 1st May 1907

I	Number of sanctioned appointments in the Civil Medical Department	46
	Number of Indian Medical Service officers in Civil Medical Department	57
	Number of Indian Medical Service officers present for duty	44
	Number of Indian Medical Service officers absent on leave	13
	Do absent on leave	1
	Do absent on Foreign service	1*
	Number of these sanctioned appointments temporarily filled by other than Indian Medical Service officers	3
II	Number of sanctioned appointments in the Jail Department	5
	Number of Indian Medical Service officers present for duty in the Jail Department	2
	Number of Indian Medical Service officers absent on leave on medical certificate	1
III	Number of sanctioned appointments under the Home Department (Government of India)	3
	Number of Indian Medical Service officers present for duty	2
	Number of appointments remaining unfilled	1

CAPTAIN J A BLACK, M B, Chemical Examiner to the Government of Bengal, is allowed privilege leave for three months with effect from 13th May and the Additional Chemical Examiner, Babu Rai Chuni Lal Bahadur is appointed to act as Chemical Examiner

CAPTAIN R D SAIGOL, M B, I M S, has been placed on special plague duty at Moulmein

MILITARY ASSISTANT SURGEON J FRASER is posted in Civil Medical Charge of Magwe District, vice Captain H H G Knapp, I M S

CAPTAIN J J URWIN, I M S, has been posted as Civil Surgeon, Serampore

MAJOR F R OZZARD, I M S, Captain T G N Stokes, I M S, Lieutenant O Berkeley Hill, I M S, Captain J W F Rait, I M S, all have passed "with distinction" the sessional examination in Tropical Medicine at the London School. It may be noticed that there were 18 candidates who were successful of these six passed "with distinction" and four of these were I M S officers

MR L G FINK, M B is transferred from Mergui to the civil medical charge of Myitkyina (Burma) and Mr C G Evers, L R C P (EDIN), is posted to Mergui

UNDER the provisions of Articles 260, 308 (b) IV (2) and 233 of the Civil Service Regulations, privilege leave for three months combined with furlough to Europe for one year and three months is granted to Major F N Windsor, M B, B A, B Sc, I M S Chemical Examiner and Bacteriologist to the Government of Burma, with effect from the date on which he may avail himself of it

THE services of Captain C G Seymour, I M S, were replaced at the disposal of the Government of India, Home Department

CAPTAIN H B STEEL, I M S, has been granted three weeks' privilege leave from 31st May

CAPTAIN M FA KET, M B, L N, I M S, assumed charge of the duties of the Special Plague Medical Officer, Burma, on the afternoon of the 9th January 1907

THE following Lieutenants are promoted Captains, I M S, with effect from 30th January —

Hugh Basil Drake
Ernest Charles Hodgson
William Sim McGillivray, M B

* Is on combined privilege leave and furlough to Europe.

William Gillitt, M B
 William Fredrick Brayne, M B
 Charles Harrison Barber, M B
 William Tarr, M B
 Merwan Sorab Irani
 Hugh Watts, M B
 Ivor Davenport Jones, M B
 Walter Taylor Finlayson
 Seymour Whitworth Jones
 William Thomas McCowen
 Hugh Ellis Stanger Leathes
 John Anderson, M B
 Edmund Arthur Roberts
 Geoffrey Gratrix Hirst
 Michael Joseph Quirke, M B
 John Morgan Holmes, M B
 Maurice Forbes White, M B

MAJOR P J LUMSDEN, I M S (Bengal), an Agency Surgeon of the 2nd Class, is posted as Civil Surgeon of Ajmer

CAPTAIN L J M DEAS, I M S, an Officiating Agency Surgeon of the 2nd Class, is posted as Agency Surgeon in Alwai

MAJOR J R ROBERTS, I M S (Bengal), an Agency Surgeon of the 2nd Class and Residency Surgeon at Indore and Administrative Medical Officer in Central India, is granted privilege leave for two months and eight days, with effect from the 10th May 1907, or the subsequent date on which he avails himself of the leave

MAJOR H BURDEN, I M S (Bengal), an Agency Surgeon of the 2nd Class, and Agency Surgeon in Bhopalwar, is appointed to hold charge of the current duties of the office of Residency Surgeon at Indore and Administrative Medical Officer in Central India in addition to his own duties with effect from the date of assuming charge, and during the absence on privilege leave of Major J. R. Roberts, I M S, or until further orders

MAJOR E J MORGAN, I M S, was granted combined leave on medical certificate for six months from 8th May 1907

ASSISTANT SURGEON MAYA DAS, in charge of the Civil Hospital, Karnal, is appointed to officiate as Civil Surgeon of Karnal, in addition to his own duties, with effect from the afternoon of the 17th of April 1907, relieving Lieutenant Colonel H Hendley, I M S, transferred

ON transfer from Karnal, Lieutenant Colonel H Hendley, I M S, is appointed Civil Surgeon of Rawalpindi, and assumed charge of his duties on the afternoon of the 24th of April 1907, relieving Lieutenant-Colonel S Little, I M S, proceeding on leave

CAPTAIN L B SCOTT, I M S, Civil Surgeon, Cichar, is appointed to act as Civil Surgeon, Kamrup District, vice Captain O G Seymour, I M S

CAPTAIN D P GOIL, I M S, who has recently joined the province is, posted as Civil Surgeon to Cichar

LIEUTENANT COLONEL C P LUKIS, I M S, was granted seven months' combined leave from 11th April 1907

THERAPEUTIC NOTES AND PREPARATIONS

QUININE ACETYL SALICYLATE, 'WELLCOME' BRAND

Quinine Acetyl Salicylate, 'Wellcome' Brand, possesses important therapeutic advantages over ordinary quinine salicylate. In the stomach, quinine salicylate liberates salicylic acid, a gastric irritant. On the other hand quinine acetyl salicylate, under the same conditions, only sets free acetyl salicylic acid, which passes through the stomach unchanged and causes no gastric disturbance. It manifests its full effect, however, after solution in the alkaline contents of the intestine. Gastric intolerance of salicylic acid is entirely obviated by the use of quinine acetyl salicylate.

Quinine Acetyl Salicylate, 'Wellcome' Brand, is of value in the treatment of influenza, catarrhal affections, gout, rheumatism, malaria, and other fevers, neuralgia, etc. Its rapid control of the febrile conditions associated with influenza and common cold may be conservatively described as not ordinary.

It may be administered in doses of gr 2 to gr 5 (0.13 gm to 0.3 gm), taken with a little water after food. Issued in bottles of 1 ounce.

Mr G H Zeal of 82 Turnmill Street, London, has sent us samples of his REPELLO clinical thermometer which registers in 30 seconds and can be re set instantly without shaking—by merely pressing a flattened bulb. There is a square guide on the lens of this thermometer beyond which the Hg should not go and which acts as a guide to the magnifier. It is a new design of thermometer and possesses many advantages.

It is enclosed in a cloth lined accurately fitting flat case which fits easily in the pocket and takes up no more room than a lead pencil, and it will not roll off the table. Mr Zeal also submits a sample of another new and original design of a thermometer which he calls the ASEPTIC, it is all glass. The thermometer is inside a glass container, and the scale of degrees is marked on the glass tube or container. The prices vary from 20 to 37 shillings per dozen in cases, wholesale.

The well known firm JAMES J. HICKS also directs our attention to his new GRAFTON'S SELF SETTING THERMOMETER, which is described as follows—

"The Case is provided with a pair of projecting arms (one of which has a loose sleeve), which, when held between the fingers, enable the Case to be easily rotated so that the centrifugal force developed, will, in a few turns, cause the mercury to be driven past the constriction in the bore back to the bulb.

To re set the Thermometer place it in the Case, which be sure to cap. Hold the loose sleeve of the one arm firmly between the forefingers and thumb of the left hand, keeping the remaining fingers clear of the Case, which is then revolved by giving the roughened arm one good spin with the forefinger and thumb of the right hand, the roughened arm being immediately released so as to allow the Case to revolve for two or three seconds on its other arm, the sleeve acting as a bearing. A fairly sharp twist is usually necessary, and after a few trials anyone can effect this."

Our readers know the preparation *Algiron* made by Messrs Evans Sons Lescher and Webb, Ltd., London, and sold by Messrs Smith Stanistreet & Co, Calcutta. We are requested to call attention to the fact that this preparation, which is tasteless and much used in anaemia and chlorosis, is in future to be known by name ALGIRON (Stanford). Algiron is also compounded with cascara, nuxvomica, or with arsenic and strychnine, as desired.

THE MEDICAL SUPPLY ASSOCIATION, 228, Gray's Inns Road, London W C, are well known as suppliers of all kinds of surgical instruments to many of the leading hospitals in Great Britain and the Colonies. This firm have called our special attention to their STERILIZABLE RUBBER SHEETINGS and APRONS, which can stand thorough disinfection and held up to 266° F for half an hour. The prices vary according to quality from 2s 9d to 3s 6d per yard.

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta.

Annual Subscriptions to the *Indian Medical Gazette*, Rs 12, including postage, in India. Rs 14, including postage, abroad.

BOOKS, REPORTS, &c, RECEIVED —

Churchill's Medical Directory, 1907
 Harro's Practice of Medicine H Kimpton
 A Whitfield's Treatment of Skin Diseases Price 8s 6d Ed Arnold
 Malta Fever Commission Reports
 Scientific Memoirs Patton
 Scientific Memoirs Christophers
 Plague at Zanzibar Report
 The Dufferin Hospital's Report
 Taylor's Sexual Diseases H Kimpton

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

The Late Major D M Moir Calcutta, Major Maynard, I M S, Calcutta
 Capt Standage, I M S, London Capt Walker, I M S, London, Dr Hossack, Calcutta, Major Jennings, I M S, Bombay, Major Heard, I M S, Simla, Capt Patton I M S, Madras Mily Asst Surgeon Brachio, Palamou, The Health Officer, Singapore, Dr I Clarke, Malay, Lt Col A Buchanan, I M S, Amroli, Lt Col Rehr, I M S, Lansdowne, Capt J Burgess, I M S, Major J L Close, I M S, Lt Col Crawford, I M S, Hughli, Lt Col Adie, I M S, Forozepore

Original Articles.

THE PROPHYLAXIS OF PLAGUE*

By P S RAMACHANDRIER,

1st Class Hospital Assistant, Mysore Medical Service,
late Member of the Plague Research Commission

INTRODUCTION

THE subject of plague which was the thesis of the I M S officers last year is selected for the thesis of the Subordinate Medical Department this year by the leading Medical Journal of India. I consider the subject all important owing to the havoc plague plays year after year. The only two epidemics in India that are at present consuming away human lives are cholera and plague. Of these two, the latter is in forefront. In support of my statement, I can do no better than to quote the mortality (1) from both to give an idea why plague is becoming the most absorbing question of the day and is engaging the attention of both the press and the public—

	Plague	Cholera
1901	273,679	271,210
1902	577,427	224,136
1903	851,263	312,854
1904	1,022,300	192,835
1905	950,863	441,786

The literature on the subject of plague covers a wide field, until recent times, the scientific aspect of the question did not engage the attention to a very great extent, owing probably to the slender weapons we had for thoroughly diving deep into the fathomless ways of mysterious nature. But with the advance of our knowledge in all branches of science, we are enabled to throw more light on the subject than our forefathers were able to do.

POINTS FOR STUDY

If one has the object of adopting or dictating preventive measures for plague, a thorough knowledge of the three aspects of it is specially required, viz, clinical side of it, epidemiology and bacteriology. A comprehensive study of each aspect of the question has its own value in helping us towards the attainment of our object, namely, to rid India of the terrible scourge which is carrying away year after year thousands of the most remunerative sons of the soil, the taxpayers whose interest the benign Government has been solicitous enough to look after, and who should receive the unmeasured gratitude of the several lacs of the Indian people.

PREVENTION IS BETTER THAN CURE

That plague has been in the land of the living from very ancient times is evident from a passage in 1st Samuel, VI Chapter, 5th verse, wherein allusion is made to the "mice that mar the land" and tumours evidently meaning the buboes. A reference is also forthcoming in the *Devibagavath* of the ancient India. While these facts go to show that this disease is not a new one, yet one is astonished at the methods adopted to eradicate it until the latter part of the 19th century. Offerings of all sorts to the enraged gods, and propitiation were all the keynotes on the preventive side, while we modernists solely and sensibly depend upon statistical evidence backed by laboratory experiments for such

KNOWLEDGE REQUIRED

For successful attempts at prevention of plague, a thorough knowledge of the epidemiology of the disease

is indispensable. Then and then alone it will enable us to lay the axe at the root of the disease.

SOURCES OF INFECTION

Rat theory considered—I think the question of plague being essentially a rat disease is now a settled fact. Many observers whose names will be found in the Plague Commission's Report (2) have arrived after careful observations at the opinion that the relationship between the epizootic and the epidemic is so close that no other conclusion can be correct than that of plague is primarily a rat disease, and is spread from that source. The question then rests as to how the infection takes place from rat to man. Is it directly by chance abrasions, or by contact with infected vermins or patients, or through the soil, clothing or food, or through an intermediary host. On the direct answer to this question depends the prophylactic measures.

The source of infection through an abraded surface, though a possible factor, does not find much support from experiences gained at the several hospitals and from laboratory experiments. In the several public institutions, where a large number of healthy persons come daily in contact with the sick, we rarely have infections among the former. In the several experiments conducted by the recent Research Commission, the results of which are not yet made public, it is proved that for all practical purposes this source of infection may be put away as of little importance.

The source of soil infection must receive our consideration now. It is a long standing belief that soil is a fruitful source of danger in the spread of the disease. Even the Indian Plague Commission (1900), concluded likewise. Yersin in 1897 found in infected localities both during epidemics and after its subsidence an organism similar to plague, but less virulent.

That *B. pestis* can live for three months in moist sterilised garden earth as Gladin found, and it can be isolated from moist sterilised cow-dung after many months as observed by Marsh (Indian Plague Commission, 1901), are not of much importance to the public who deal with unsterilised soils. The experiment that are of practical value are those conducted by Capt Mackie, I M S, (3) and Dr Winter (4) of the Bombay Bacteriological Laboratory and by the recent Commission (5). These experiments prove to us the period of infectivity of soils as found in the floors of Indian houses, but with far grosser contamination than ever would be obtained in natural infections. Cow dung floors were grossly contaminated with virulent cultures. From cultural methods and animal tests, it was concluded that *B. pestis* can not only multiply but dies out in four days in these soils. In similarly treated chunam floors, *B. pestis* does not remain infective for even 24 hours. From the above facts, we have now to draw a conclusion regarding the possibility of infections in Indian houses. The floors in infected houses could only be contaminated by urine or fecal matter being passed on earth. The question now arises whether the excreta of plague stricken patients or rodents contain the bacilli to such an extent as to infect the floors. From experiments conducted in the laboratory to solve this point by the Commission, the conclusion was arrived at that both the urine and the feces of patients or infected rodents have very little power of infectivity. We may conclude, therefore, that this source of infection is not of importance.

The third issue now requires consideration, viz, the source of infection through food and water. Some authorities, notably Hunter, Simpson, Wilm, and the German Commission attached much importance to this source. No doubt, when healthy rats are fed on plague-infected materials, we see that about 15 to 20 per cent die of plague with intestinal lesions. But from observations made in 5,000 naturally infected rats, with a careful scrutiny, where a total absence of intestinal lesions was found, we have to conclude that the intestinal tract is not the source of infection. Therefore, this source of infection, though possible in laboratory methods, is not

* Being an abstract of the Prize Essay for the Rs. 100 prize presented by the Proprietors, *Indian Medical Gazette*, to Assistant Surgeons and Hospital Assistants.

a probable factor in nature. All these considerations now go to show that there is something beyond cutaneous, soil, or food infections, which is the prime factor in the dissemination of plague. Is it possible that some suctorial insect may act as intermediary host between rat and man? It will be seen now from a study of the Plague Commission's report that it is fully established that such a host is no other than the rat flea *Pulex cheopis*. An idea which first originated with Simond in 1898, did to a certain extent receive support at the hands of Ziroliia, Gauthier and Raybaud, Thomson, and Liston, but has now been fully proved by the Plague Commission to be the main source, if not the only source through which plague is communicated from rat to rat and rat to man. Having thus far studied the subject in regard to the causation of the disease, we can now enter into the province of the subject matter of the thesis, *viz*, prophylaxis of plague.

PROPHYLAXIS OF PLAGUE

Preamble—With the definite pronouncement of rat epizootic preceding plague, and rat fleas as the principal source of the disease, all attempts at prevention must be directed to destroy the two important sources of danger. But before entering into details, I wish to say a few words on the general outlook of all preventive measures to be adopted.

I, for one think, that the possibility of any public body achieving great success in any measure without the active co-operation of the general mass is very meagre. Though every one realizes this fact, yet sufficient weight has not been given to the same in the practical methods adopted, and therefore, it is I touch upon it here. Yet still more important for the success of any measure lies in the way in which it is thrust before the public. It may once for all be said that whatever measures are adopted, they must be such as not to meet with a strong current of opposition from those at whose interest such measures are undertaken. The steps taken should be on the line of least resistance. If we assume too much of dictatorial power, and adopt coercive steps, they are sure to fail. For no public body, such as Government, or the Local or Municipal Boards can cope long with opposition without bringing on blood shed of the very persons in whose interest we spend large sums of money. No doubt, a good deal depends not upon systems but upon the instruments which carry out those systems. That means that the persons who are employed, are responsible to a large extent either to the success or failure of the object in view. Very often persons with little sympathy, assistants with no tact, men with no sound knowledge of the customs, and habits of the people, might bring on catastrophes which might be easily averted by a little tact, tolerance, persuasion, and co-ordination with the environments. Therefore, much of the success depends on the men chosen to carry out the measures. Men who are employed must possess therefore an indefatigable energy and zeal, tempered with patience, combined with tact, able to converse with the people in their tongue, possessing natural resources to act sensibly in times of emergency, in a word should accomplish the end in a peaceful manner, throwing heart and soul in the work, not counting upon pay and allowances. Such should be the type of persons chosen for this work. Having secured the proper instrument to carry out the campaign, the next step is to secure the full co-operation of the public. Such a co-operation is quite possible to be obtained, I am prepared to affirm, for having been personally in charge of plague preventive measures in a large coffee planting district in the state of Mysore, where the throng of people from infected areas was large, the people helped in preventive measures with funds and men to their full might. What is wanted is to take the public into confidence in any measure that we adopt. More about this will be said under education.

Now about the measures themselves. They may be

divided under the two main divisions, public and private precautions. Public precautions are —

- 1 Education
- 2 A systematic destruction of rats
- 3 A systematic examination of all dead rats
- 4 Evacuation of infected areas
- 5 Inoculation
- 6 Health camps
- 7 City extensions and improvements
- 8 Isolation of patients
- 9 Railway and ship inspections

Private precautions will be detailed in their place.

I EDUCATION

It must be said that no one measure will be a sufficient stronghold against so formidable an enemy as plague. Therefore, a combination of one or more must always be adopted according to local conditions. I have given prominence to this, owing to the fact that many of our measures fail on account of not educating the mass in our plans of campaign. Before we undertake any measure, we must educate the ignorant people as to our intentions, and what our aims are, and what good would result by our endeavours. I am afraid that there is a great lack of this in our present methods. The want of education lies at the root of all oppositions to all beneficial steps that are being adopted by the public bodies in India. The number who are estimated to be literate according to the census of 1901 is about 19 per cent. This estimation includes all those who are able to know even alphabets. When we consider the amount of education required to understand rightly sanitary laws, and laws of the preventive methods of several diseases, I should consider that half the above percentage will be above the mark. The general mass is drowned in ignorance. Would it be possible to impart sufficient knowledge to them in a short period? No. Never. We have therefore, to depend upon educating them in the line of scientific ideas by popular lectures, lantern exhibitions, table talk and broadcast leaflets. A sort of missionary life must be resorted to for the purpose, and special men who have a persuasive tongue, and sweet ways must be sent out to have evening meetings. The lectures must be in the language of the country. Yet more important than men's education is reaching the women folk. We forget that all methods of preventing diseases are to begin with from the hearth. The ladies at home must be taught the ways of prevention and the importance of the same. This must be done by employment of lady lecturers. India cannot, I am afraid, supply Indian women for the purpose. So English ladies, such as nurses may be employed. Thus both the men and women must be taught the usefulness of the measures that are to be adopted for the prevention of plague. In this connection, the Indian Press owes a duty which it has not realized as yet. At present, one may read from one end of the year to the other the leading papers, to find himself mostly animated with feelings of animosity towards a race which has come to govern this land by its fitness to do so. One will not find himself a whit better in knowledge of a nature which will build him up physically. The public press no doubt wields a strong power over the minds of the mass. It is therefore its first duty to diffuse knowledge of scientific truths freely and frequently. In fact every issue of a paper must have a column or two specially allotted for the diffusion of sanitary and medical knowledge in a popular language. In the absence of the same, I should put down that the press has not realized its duty towards the mass, in developing its physical education.

I lay much importance on this measure, inasmuch as by so doing, we would gain the confidence of the public, which will smoothe the way for easy sailing in our undertakings. It will greatly prevent wild rumours and conjectures. By taking the masses into confidence, full co-operation of the people themselves would be secured.

RAT DESTRUCTION.

Few persons will deny that rat destruction as a preventive measure of plague must receive the first attention. This measure, though scientifically correct, is not easy of complete success. The great difficulties are the prolificness of the rats, the cost required to destroy the generations of rats, the uphill work we meet with in overcoming the religious feelings of the people, and their apathy in assisting the authorities in the wholesale destruction. Whatever the difficulties may be rat destruction, if only it could be carried out in a thorough manner, would certainly minimise the virulency of plague.

Suggestions to carry out a successful crusade against rats—This is one in which no half measures will do. It must be carried out year in year out. I will not advocate this for villages and even taluka towns, owing to the fact that we can adopt cheaper methods of prevention in thinly populated places. This is therefore very useful in large towns and trade centres. A town or city must first be divided into small blocks. The houses in the blocks must be numbered for easy reference. Each block must consist of a number of houses which could be easily traversed by one twice a day. A special man, as rat catcher, must be employed. He must be given only a nominal pay but more encouragement in the way of bonus. Not more than quarter anna must be given for each rat caught.

RAT TRAPS

The next step in the operation is to buy a large number of rat traps. The number required cannot be put down in round figures, but it depends upon the extent of the city. If one trap can daily be put into a house, that will be sufficient. The traps may be bought or made locally. They must be durable and secure so as not to allow the trapped rats escaping. The traps, while being of the superior quality, must be kept scrupulously clean and free of rat smell. For by experience I have found that the least smell of the previous days' rats in the cages prevents other fresh rats coming in. Therefore the rat traps must be fully immersed in hot water every day, and kept in the sun during the whole day.

BAITS

The next point, though trivial in itself, is all important, I mean the sort of bait put in. The rats appear to have a natural disinclination for dried cocoanuts, bread and such other baits which Brahmans generally resort to, but fresh pieces of mutton or dried fish is far more tempting.

POISONING

I think it is next to impossibility to exterminate the rats by trapping alone. Rats after a time become alert and avoid being trapped in. We have therefore to devise several other ways of killing the rats. Poisoning them with the Commonsense Rat-exterminator or arsenic may be resorted to. This must be done under careful supervision. Otherwise children may be poisoned.

CATS AS RAT KILLERS

Everybody knows that cats do kill rats, and yet it passes my comprehension why every house owner does not rear a cat. Cat rearing is good and must be encouraged.

II

WORKING METHODS

Now having considered the preliminaries, let us now consider the working methods. The city being divided into blocks, each block should be in charge of an inspector, preferably a medical man. Under him ten or twenty rat catchers are placed, the number being decided upon according to the extent of the locality. However,

the extent of locality must not be beyond the easy reach of the circle inspector. The rat catcher must lay in the traps in the evenings, and bring the traps to a central place in the mornings. Each trap must bear a number, a tin with numbers printed on it and attached with a piece of wire will be the best. A register must be maintained as to the number of houses in which the traps are put in, and the number of rats recovered, so as to be a useful guide for tracing out plague rats in time. The traps are daily put in and rats are caught in this manner. The circle inspector will pay surprise visits to the blocks in his circle after sunset to see the traps set in by his subordinates. There is no use of depending upon the manual staff. It should be the duty of the circle inspectors to maintain the registers, to kill the rats, to examine dead rats, and supervise the health of the people in his circle. Special selection of places must be made in putting the traps in. The rooms containing stores and cook rooms are more frequently haunted by rats than the bed rooms or offices where the scarcity of food stuffs for them is prominently present.

The rat catchers must be paid a nominal pay of Rs. 2 or 3, but be encouraged in the way of bonus of $\frac{1}{4}$ anna per rat caught or brought by them.

I would say that the whole scheme must be under the direct supervision of an I. M. S. officer who has shown a keen aptitude for scientific observation, as the steps we advocate are still in the experimental stage. It is no use of throwing money away without watching closely the benefits of the measures adopted at different stages. I also think that what is best or worst in one part of India cannot be depended upon to end in similar results in other parts. For much depends upon the place, the type of men that are selected to carry on the measures and the co-operation of the general public and the amount of money spent. Therefore no measure ought to be condemned without a fair trial.

FINANCIAL OUTLOOK

The next question is about the cost. Any measure that we undertake must not be prohibitive. It should be such that it would be within the means of local resources and not such as would be a heavy drain on the slender purses of public bodies. The people must be taught to raise funds amongst themselves for such measures. This serves the double purpose of teaching them self help and co-operation with public bodies. There is a growing tendency among the people to look up to Government for everything, even to the extent of being married, and their children being brought up. Therefore it is that self help and self reliance must be taught, especially in matters concerning health. The results of our operations must be placed before the mass often so as to show that their money is being spent to their best advantage, so as to make them liberal enough for advancing further funds. Such methods are possible enough, I say from personal experience.

A ROUGH ESTIMATE

I am unable to estimate the cost of this measure at present, as no data is forthcoming. But I will give a rough one. I will take a city for example whose population is 1 lac. The city is to be divided into ten blocks, each block under one inspector. Under each inspector ten rat catchers. Over five inspectors one supervisor. Over all these one officer.

100 Rat-catchers on Rs. 2 each	Rs.	200 a month
10 Inspectors on Rs. 25 each	"	250 "
2 Supervisors on Rs. 50 each	"	100 "
1 Officer	"	600 "
Clerical establishment	"	200 "
Rewards for rat catchers never more than $\frac{1}{4}$ anna per rat	"	1,000 "
Contingencies	"	200 "

Total Rs. 2,550

In the above it will be seen that estimation is made for the destruction of 768,000 rats in the year. This if

reduced into practice will be adding materially to the success of preventing plague

THE EFFECT OF RAT DESTRUCTION

Let us now consider the effect of rat destruction on the incidence of plague from some of the statistics that we can get at hand

In the town of Jugdispore in the Shahabad District, rat destruction was carried on in a large scale in the year 1905. The town suffered terribly in the previous years, but in the year of rat destruction it comparatively escaped (6)

Rat destruction is being carried on in Madras but that will in no way help us in this connection as plague did not affect the city to any extent (7)

The Town of Azimganj was visited badly in 1904, and rat extermination was begun in 1905 and lasted for a year with the result that in the area where it was carried out the incidence of plague was diminished to an appreciable extent (8)

In the City of Mysore rat destruction was keenly taken up in 1904 with the result that next year there was a great fall in the figures of plague (9)

In the City of Bombay, the same result has been reported (10)

In the town of Nagpur similar success has been claimed (11)

Against all these facts the observation of so great an authority as Kitasato is discouraging. "However, the extermination of rats is complicated by the fact that the rodent increases at an enormous rate, as a rule within a month of pregnancy the female gives birth to five young ones at a litter, and the young reach puberty and become pregnant at the age of 3 months, thus these animals multiply in a geometric progression. Furthermore, if rats are destroyed by artificial means such destruction only lessens the struggle for existence and then the rate of multiplication is much increased. In Tokio more than 4,800,000 rats have been killed, yet we can hardly notice any considerable decrease in the number of these animals" (12)

The Indian observers have placed great confidence on rat destruction as a preventive of plague

EXAMINATION OF RATS

The next preventive method is a systematic examination of all rats in the city. By so doing, we will be able to detect the epizootic in the first instance, and be able to adopt either evacuation or disinfection

INOCULATION

This is a measure on which much hope may be placed as a valuable adjunct in our prophylaxis. Up to now we considered the causative agent and the benefits of destruction of such. When we consider that it is beyond human power and skill to annihilate totally generations of rats, it is no use of placing implicit faith on that measure only. Side by side with it, we must attack the entrance of the bacilli into human bodies by raising the powers of resistance. I think I with Sir A. E. Wright that "life is the relation of man to experimental science, happiness is stated in terms of the opsonic index of man to imminent micro organisms, the laboratory is the source of a wise man's knowledge" and, I add, safety and power. I should, therefore push on with the inoculation. I quote only a few statistics to prove my point. [Omitted]

From the study of such figures it is evident that protection by inoculation is not only a sure method to prevent the incidence of plague, but even the recovery rate amongst the inoculated is greater. While such is the value of inoculation, there seems to be a great lack of pushing this to the front. Therefore steps must be taken to popularize this. Some of the ways of doing this are by giving public lectures in the language of the country at different parts of the city by different persons always presided over by the leading citizens. The leading citizens must set examples by getting themselves inoculated before the masses

Opening inoculation depôts in different parts of the city must be resorted to. But the men chosen to do inoculation must be competent enough to attract the people. To give a sort of encouragement to the labourers of industries and municipal servants a day's extra wages may be offered. Inoculation is a measure by which we can minimise plague incidences in such large cities as Bombay, Nagpur, Poona, Bangalore, Mysore, etc., where owing to their territorial extent, scramble for gold by trade and industries and activity of official life, people cannot be easily moved to camps, and even rat destruction cannot be very successfully carried out

EVACUATION

Next in importance is evacuation. This is by far the most convenient and cheapest method when compared with either rat destruction or inoculation. I would entirely depend on this for villages and towns whose population is not more than 10,000. Beyond that figure it would not be possible to effect the wholesale clearance of the inhabitants. This to be successful must be done immediately the epizootic spreads. I know several instances in which the people have moved out and plague deaths have occurred in their camps. One of the reasons for this is the frequent visits of the people to the towns after evacuation during day time to transact merchandise or to bring rations from home. Another may be people taking clothes, etc. without thoroughly disinfecting them. When the epizootic is going on, the fleas would be moving about in the localities in search of food, and the first come is first caught

The following suggestions if carried out in their entirety will be of immense good. On receiving the first information of the death of a rat in a place, the revenue and police authorities must proceed to the infected place, call for all the inhabitants and tell them the benefits of evacuation. In short by persuasion and I would even justify a little coercion move them out to suitable camping grounds. It will add to great convenience if places are allotted to each sect. A free contribution of hutting materials to the most indigent must be given. After the removal of the people, a police cordon must be placed round the village to prevent the entrance of the people into again, until declared to be free from epizootic

DISINFECTION FOR VILLAGES

I think the best disinfection for villages and small towns is direct sunlight. It must be allowed into all the houses by opening out the roofs here and there

REMOVAL OF DEAD RATS FROM HOUSES

Arrangements must be made by the public bodies to send in inoculated persons into each house to search for dead rats, and to burn them. The other personal precautions mentioned in the last pages of the thesis will be applicable for sending persons into infected houses

TIME OF REOCCUPATION OF EVACUATED VILLAGES

There need be no two opinions on this point. Once evacuated, the people can occupy without fear of infection after three months. Only in exceptional cases the infection lasts beyond that period. The inhabitants may be allowed to go into the village without a show of disinfection

Evacuation in large cities cannot be followed in its entirety. But even if some move out of their own accord, it will diminish the incidence. Therefore camping out must be encouraged. A number of Health camps more or less permanently built might be run up, and a small rent collected from the occupants, during the plague season. But such camps must never be given for permanent living, for by so doing we will allow the collection of all yearly supplies which will attract rats into these places

DISINFECTION

This has become a knotty question. Opinions are divided on the utility of this measure. Till now large sums were expended on this without a thorough investigation into the value of the measure.

The disease is solely spread by rat fleas. Having thus far advanced in our knowledge in the causation of the epidemic, why then go and waste money on a measure which cannot affect the cause. Any disinfection, if at all to be of any value, must be able to kill rat fleas. Disinfection by perchloride has been found by the Plague Commission (14) to be useless for the end, for fleas are not thus to be killed.

Now another disinfectant which is being much extolled as a great insecticide is crude petroleum or 'Paste rine' as it has been called. No doubt this agent directly kills fleas. It is not on that score I condemn this. It is so to be condemned when we consider the time when this measure is used as preventive of plague. Now basing our argument that that disinfection in whatever form is solely done with the avowed object of killing these fleas, can we exclude infected rats coming into the disinfected house again and re-infecting? Rather I fear that is not improbable. Another great drawback is the delay which is allowed between infection and disinfection. We get information of the dead rats being found in the majority of cases after several hours, nay even days. In almost every case we get the information after human infection. By the time we get the information, the fleas have done any mischief they are capable of. We have found from our observations that they require constant feeding on some blood. When the rats on which they were feeding are no more, they find ready the inmates of the house. They feed on any of them with the result the susceptibles become a prey. After the mischief is over, we receive the information, and we hasten to attempt to avert what is already accomplished. I ask are we justified in disinfecting a house after human cases have occurred? Not the least. That may be condemned altogether. Disinfection with the object of killing fleas to be useful at all must be done immediately after the dead rat is found. What happens as soon as the rat is dead is the fleas which were infesting the rat having no more blood to suck seek the nearest guest. If no rats are near, they find in human beings what they seek for blood. Owing to the ignorance of the people and also to other causes in 99%, we receive information of any infection at too late an hour. But where we receive the same immediately the rat is dead, disinfection may be of some avail if done in a scientific manner.

DISINFECTION RECOMMENDED

As soon as the information of the death of a rat is received, hasten to the spot. Clear out the inmates of the house. Do not allow them to take their clothings especially from the room where the dead rat was found. Remove the furniture, etc. Put in two guinea-pigs to run about for at least an hour or two. Search for fleas at the end of two hours, and transfer the pigs to the nearest laboratory for observation of their fate. Then disinfect with any material which is insecticide. After some hours, allow two more guinea pigs to run about the floor. Search for fleas again. If in the first instance, some were found and after disinfection, none are found, you may rest be assured that they have been killed by the disinfection. Repeat the running of the guinea pigs for one or two days to see for fresh infections. While recommending this method for large cities, I will limit my recommendation for houses which are pucca built. It is no use of disinfecting the houses where you cannot reach rat holes. No disinfection is necessary for villages and also for houses in the cities where direct sunlight can be let in by opening out the roofs.

SANITATION AND ITS IMPROVEMENTS

Plague is not a disease arising solely out of insanitary conditions. Insanitation is only a favouring condition

for its spread. It helps in the spread of such diseases by lowering the powers of resistance to the entrance of pathogenic germs into human systems by the vitiation of general health. It is why and how we find that people living in low-lying, badly ventilated, overcrowded localities suffer much from pestilential diseases. Therefore if sanitary improvements are recommended with a view to improve the general health, we are justified in doing so, but not as direct measure to prevent the incidence of plague. Even here I would say that what is wanted is not sanitary improvements in the way in which it is being done in Bombay, but city extensions as are being done in Bangalore and Mysore. I have not before me figures to show how such extensions have virtually lessened the incidence of plague, but I believe from general aspect of the question, I will be justified in recommending city extensions as preventive of plague. Now what is being done in Bombay is, all insanitary places are acquired, and the houses therein are demolished with the result that the inhabitants are indirectly told to find shelter in other parts of the existing city. The consequence being that when you aim to improve one portion, you vitiate other portions of the same city by overcrowding. It is, I believe why the Improvement Trust in Bombay has not justified the value of its strenuous work for so many years. If the system which is being adopted in the Native State of Mysore, which I believe will even act as a direct method of plague prevention with little more improvements on the general working of the system, it is of greater value.

IMPROVEMENTS SUGGESTED

It is not made compulsory on the builders of houses now that houses be built rat proof. With that legal compulsion, the extensions will prove of much value. The foundations should be of stone and mortar, and the plinth be raised above the ground at least two feet. The basement also should be of impermeable material so as to prevent mischief of rats boring to make nests for themselves. Free light and ventilation must be imposed upon the builders as legal conditions, as both have a detrimental effect upon the life of fleas. Each house must be separated by open grounds from one another. With these conditions, I should say, city improvements will in a way act as direct method of preventing the spread of plague.

ISOLATION OF PATIENTS

This measure to prevent plague now calls from me a word or two, as I think it first received very great prominence in the early periods of our preventive measures. From our experience of the several hospitals, a safe conclusion can be drawn from the immunity with which the ward boys, nurses, doctors, and other servants have escaped plague, that this epidemic is not infectious from man to man in a direct way. When we add to this experience, the knowledge which we have gained by the researches of the Plague Commission, which huddled in a room a lot of healthy guinea pigs with inoculated ones, imitating the other conditions of ill ventilation and darkness, which we find in poor houses, we are justified in condemning isolation for the sole intention of prevention. The guinea-pigs that were infected with plague died and were even left in the room for several hours to vitiate the air of the room. None of the contacts took plague. But repeating the same with the addition of fleas, contagion at once spread, thus showing that an intermediary host is required. In the observations made in a village in Punjab it was found that in 80% of infections were single cases, and in the rest where double or triple infections occurred, they were plague-stricken within two or three days from one another, thus showing that the infection was from a common source,

* This is compulsory in the city extensions of Mysore and Bangalore.

and not from person to person. If that was so, the intervals between one case and the other would have been much longer.

Removal of plague patients for the object of better treatment and care to hospitals is to be recommended but not as a preventive measure.

RAILWAY AND SHIP INSPECTIONS

Railway inspections as a preventive of plague are no use whatever. By this method, we cannot prevent rats travelling with goods trains. If by human ingenuity, we can devise means for the examination of goods trains with the object of detecting infected rats, that is more scientifically correct than the railway inspections of passenger trains.

While totally decrying railway inspections, I will strongly advocate the inspection of passenger and merchandise vessels with the view of finding infection. The fact of having an infected person in the crew will not be a danger to the other passengers, but danger lies in the possibility of infected rat fleas having been brought on board by him in his clothes. If inspection is done it must be at both ends, that is before leaving a port which is infected to prevent infected passengers getting in, and also at the other end to see that any of the passengers that were amongst the crew, is not infected in the way. This may happen if a person was in the incubation period when starting from an infected area. If a passenger should be found amongst the crew infected, the vessel must at once be quarantined, and disinfected thoroughly with the Clayton gas apparatus. The clothes of all fellow passengers will have to be disinfected to kill all fleas that may be lurking in them.

We have found that rat fleas can live without feeding for 7 days, and feeding on human blood solely for 23 days. Therefore it is possible for infected fleas to be transferred in clothes of persons within 7 days and feeding on human blood in 23 days from port to port. It has also been ascertained that rat fleas are capable of infecting to a period of 21 days healthy rats shipping over many a one in thus infecting. These facts show us the danger of rat fleas being carried from port to port from an infected area to a non infected area. It is, therefore, very essential that all ships must be thoroughly examined.

SUMMARY

To summarise the preventive measures to be adopted by public bodies, I will place the following in order of precedence. For large cities, education of the masses in the steps undertaken to prevent the spread of the disease, destruction of rats under competent scientific men, testing the result of the same at different stages of the operation, examination of rats, disinfection with certain limitations, inoculation, provision of open grounds for health camps, construction of the same for the most indigent, city extensions and sanitary improvements.

For small towns and villages, evacuation and opening of the roofs of the houses to let in light to destroy fleas.

For non infected areas within India, general improvement of the sanitary conditions, and notification of all diseases.

The latter must be made compulsory to enable the local bodies to adopt preventive steps immediately. There is at present an utter failure to recognise the importance of this measure as the sheet anchor for preventing all epidemics in India. In the absence of this, the Sanitary Commissioner for India is unable to rely on the vital statistics of the population as he could not on those of the Indian army and the prisons. There is a deplorable want of information on the vital statistics of the general population.

I would also suggest that death certificates must be granted by qualified medical men wherever they are available. In all places where hospitals and dispensaries are now established, it must be enforced that

the men in charge must maintain the death and birth registers and be held responsible for the vital statistics of their respective stations.

PERSONAL PRECAUTIONS

If the following personal precautions will be observed, that will materially decrease the incidence of plague.

1 Individuals must destroy all rats infesting the houses. Lay about two or three of the best traps in different parts of the house every night. The best baits are fresh mutton. Change the laying of the traps to different rooms as rats after some time become careful enough and evade being trapped in.

2 During plague season, send all rats for examination to the laboratories, if one is existing in the city.

3 If a dead rat is found in any part of the house, do not approach with neglect. As I have said before the fleas will catch the nearest guest, and victimise him. Smear a coating of thick oil, such as castor oil, which is readily found in every Indian house, as far as the knees and arms as fleas do not jump more than six inches. Fleas I have personally observed not to be able to stick over the oily surfaces and bite. Pour over the dead rat kerosene oil before you touch it.

4 Allow not your servants to go unprotected near the dead rat or to the room where one is found. Note that fleas live without food for seven days. Therefore the danger of infection is lurking in the house for at least one week after the dead rat is found.

5 It has been found by us in the Plague Commission that cow dung is a suitable nidus for fleas for in cow dung they live longer than dry earth. Our Indian custom of washing the floors with a solution of it is to be abandoned. The best will be to use ordinary water, and if anything has to be used at all, choose the lesser evil. A mixture of red earth and powdered charcoal will be found a substitute.

6 When a dead rat is found, you take it for granted that it died of plague. 'Who has seen rats being found dead in the ordinary times in our houses?' We never see them coming out of their holes to the middle of the house and dying. Therefore immediately you find the rat dead or dying, never be wavering but clear out of the house to your nearest friend or relative. Do not take the clothes without fully exposing them to the sun.

7 Apply for the disinfection of the house to the authorities immediately the rat is dead, and do not allow time to lapse.

8 Sleep on cots at nights. Many rats that are infected die at nights. Besides rat fleas are nocturnal excursionists, and when the rat is dead, they come to men to feed upon them. If you sleep on cots, there is less chance of their hopping up on you. They are not good jumpers. If you smear the legs of your cot with 'Pestoline,' it will totally prevent the fleas hopping on your cot. The smearing may be done once in two days.

9 During the plague season, get yourself and your family members inoculated. The immunity lasts for at least a year.

10 Build pucca houses with stone and mortar, Cuddapah slab or other impervious flooring.

11 If you evacuate your house, do not occupy until the subsidence of the epizootic in the place. That you can know quite easily when your neighbours do not tell you of the dead rats being found here and there.

11a Rear cats.

12 Educate your females in the line of your thought and get them to co operate with you in all preventive measures you adopt.

13 Lastly I, as an Indian, would say that each must be a guide and be guided.

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INTERNAL DERANGEMENTS OF THE KNEE JOINT *

By ADRIAN CADDY, M.D., B.S. (LOND.), F.R.C.S. (ENG.), D.P.H.

MR PRESIDENT AND GENTLEMEN,

My reasons for bringing this subject before you to-night, quite apart from any personal interest in the matter, are that before I came out to India I had unusually favourable opportunities of studying this class of case and also I had the privilege of working under two surgeons who were pioneers at this work, viz, Sir William Bennett and Mr Herbert Allingham, and who have operated on a greater number of cases individually than any other Surgeons.

The first authentic account of a loose body being removed from the knee joint was that of Ambrose Paré, (1) who in 1558 removed one when he was opening an abscess in connection with the joint, the body springing out with the pus.

Morgagni removed one some years later, Benjamin Bell (2) in 1787 speaking of those loose bodies in the knee joint not freely movable, says "In these cases I would advise amputation of the limb, the remedy is no doubt severe, but it is less painful as well as less hazardous, than the excision of any of these concretions, that have been attached to the capsular ligament."

William Hey (3) in 1803 first described internal derangement of the knee joint as being due to semilunar displacement and also detailed his method of reduction by flexion followed by sudden extension.

Loose bodies Hey says were described by Bromfield (4) in his *Chimurgical Observations* and also by Ford (5), Hey considered them due to pedunculated bodies growing on fringes of synovial membrane and for treatment recommended a closely fitting laced knee cap.

Reimarus (6) mentioned by Hey recommended bandaging for the knee.

The pathology of internal derangements has chiefly been based on superficial examinations of the joint during operations until Tenney (7), an American Surgeon, in 1904 went into the question thoroughly by examining 150 cadaveric joints and found nearly every variety of internal derangement. In order of their frequency he described five varieties of internal derangement, namely

(a) *Tabs* from the lubricating apparatus, which may be fine fringes or dense fibrous tabs, the fringes normally probably lubricate the joint, Allingham (8) found them occur in two cases out of 59 in which he opened the joint.

(b) *Erosion of cartilage* from a shallow grazing of the cartilage to bare bone with fibrous tufts growing from the edges of the eroded space, occurring generally on the external tuberosity of the tibia.

(c) *Damaged and misplaced semilunar cartilages* with either fine fringes at the edge of the cartilages, or else the cartilages have been caught between the bones and split longitudinally, or transverse tears due to the anterior free portion of the cartilage being carried forward away from the part of the cartilage which is firmly attached to the lateral ligament of the knee, this ligament allowing very little play to the cartilage. He found transverse tears the most common injury in the joints examined. There was one case found on the cadaver of the cartilage being curled up in to the inter-condylar notch, this condition was described by Crott (9), Barker (10) and Turner (11), previously Hoffa (12) describes the semilunar torn from its anterior attachment and turned back on itself, and he also mentions another form of derangement, namely,

(d) *Atrophy of the quadriceps tendon*, which allows the capsule to catch between the femur or tibia and the patella.

(e) *Of ruptured ligaments*. Hints (13) has collected 31 cases of rupture of the internal lateral ligament and three of ruptured external lateral ligament, these cases not being complicated by dislocation of bones.

Robson (14) described a case of ruptured crucial ligaments a few years ago.

Of displaced cartilages Tenney collected the reports of 128 operations performed by 47 operators and found that internal cartilage trouble was seven times as frequent as external displacement, and of the internal cartilages, a transverse tear was $1\frac{1}{2}$ times as common as a longitudinal split or a separation of the anterior attachment of the cartilage.

The term "loose cartilage" is an unfortunate one and should be discarded as both semilunars have a certain amount of movement normally.

The male sex largely preponderate, only 5% of women being operated on in Bennett's Series.

* A paper read before the Asiatic Society of Bengal, May 1907 at Calcutta.

and damage to the left knee being twice as frequent as damage to the right

The explanation of the causation of loose bodies in the knee joint have been well tabulated by F G Connell (15), namely

(a) Dry arthritis with overgrowth of the margin of the articular cartilage

(b) Bony growths broken away from their attachments

(c) Infarction of articular cartilage with final separation of the infarct

(d) A plate of bone formed outside the joint and then invaginated

(e) Chondrification and calcification of enlarged synovial villi

(f) Irritation and growth of embryonic cartilage and bone cells in the synovial fringes

(g) Concretions similar to calculi formed on blood clots, torn synovial fringes, foreign bodies, lipomata or articular cartilage

(h) Articular cartilage or semilunar cartilage broken off by direct violence or damaged and subsequently separated

Burghard (16) described the preceding case and confirmed it at operation

Albuthnot Lane (17) noticed in a case a defect in cartilage equivalent to a loose body found in the joint, his case was unique in having symmetrical loose bodies in both knees, Bowlby (18) and Clutton (19) each have had similar cases of symmetry

Poulet and Vailland (20) chipped off pieces of bone in dogs' joints and sutured the wound again, they found that the detached portion became vascularised and got completely covered with cartilage of an embryonic and irregular character and occasionally formed fresh attachments

Muller's lipoma arborescens or subsynovial lipomata as described by Bland Sutton can also be described as loose bodies in joints

The general lax condition of the capsule of the joint allowing lateral mobility as the result of many attacks of internal derangement has been noted by many observers including Allingham, and Shaffer (22) laid great stress on the loss of the brake action of the patella on the femur as the result of lengthening the ligamentum patellæ and hence increased liability to sudden strain

Bennett (23) in his most recent work points out that generally the external cartilage is much more damaged than the internal relatively, when the external is the chief seat of trouble

Concerning the treatment of internal derangements previous to modern surgical methods, there is nothing much of note, varieties of knee caps were used, as mentioned by Hey, and occasionally some Surgeon bolder than the rest removed loose bodies by operation with generally unfortunate results, also various splints were tried when the joint got too mobile from laxity of the capsule. Modern operative treatment can be said to date from 1895, as

previous to that date the cases recorded are few and far between. But at the present time, a sufficiency of cases has been recorded by various operators to give a very fair idea of the risks and dangers of active interference

Flint (24) in 1905 analysed 310 cases of knee joint trouble in which infection had occurred, including in this series,

(a) clean knees operated on,

(b) penetrating wounds of the joint, with or without evident point of entry,

(c) joints opened in the course of infections elsewhere, and

(d) infections following some non-penetrating trauma, the results he tabulated as follows

One operation in 22 (4.6 per cent) on clean knees became sufficiently infected to demand further operation

One operation in 35 on pathological non-traumatic knees more than five days after an acute attack of synovitis requires a secondary operation (2.9 per cent)

One operation in 22 for simple fractured patella demands a secondary operation (4.6 per cent)

One operation in 71 for simple fractured patella, if done after the fifth day, requires further operation (1.2 per cent)

10.5 per cent of operations for simple fracture of the patella, if done before the fifth day, require further operation

11 per cent of cases of infected knees that have been opened and drained, die

6.6 per cent of cases of infected knees which have been opened and drained come to amputation before recovery

3.3 per cent of infected knees which have opened and drained are resected

These statistics show us several important facts, viz —

(a) that pathological knees, that is those with loose bodies or other non-traumatic trouble are much safer to operate on than those whose lesion is primarily traumatic, like cases of split cartilage

(b) The great risks of operations for fractured patella if done before the fifth day and the extreme safety if done after that date

(c) The fortunate rarity of the necessity for amputations after operation on the knee joint

Personally I have had the misfortune to see two infected knee joint cases come to amputation during my student career, one was a case of fractured patella in a pregnant woman, which was wired and later came to amputation of the thigh with recovery, the other was a case of a small punctured wound of the joint, septic arthritis set in, the patella was divided transversely, and joint freely opened and washed out with strong biniodide of mercury solution (1 in 1,000), amputation had to be performed two days later and was followed by the death of the patient

Tenney has tabulated 297 cases of operation for loose bodies in the knee joint since 1895,

with six cases of ankylosis, no amputation and no deaths, this probably includes many of the cases tabulated by Flint

During the last year my brother Dr. Arnold Caddy and myself have had two cases of operation for internal derangement of the knee joint. The first case, a European aged 25, a well-known cricketer here, had displaced his left internal semi-lunar cartilage on six occasions since 1898, necessitating stays in bed on each occasion from fourteen days to two months, perfect extension of the joint was not possible in his case, there was general laxity of the capsule and later mobility of the tibia on the femur.

We removed his internal cartilage and he obtained a perfect result with no recurrence of symptoms.

After his operation, he developed fever for 14 days of a mild typhoid type, although no Widal reaction was obtained when tested for, the joint, however, pursued an absolutely normal course without any effusion and he was bending his joint himself 17 days after the operation.

The other case was a young European of similar age, and symptoms of some years duration also, the chief trouble being frequency of the attacks rather than their severity, this was the chief reason for the operation as the joint was not very seriously damaged as yet.

His operation was followed by a perfectly uneventful recovery, and now he is riding daily and has just recently attended the Calcutta Light Horse Camp of Exercise.

The subject of treatment is one that now follows certain fairly well defined rules.

In all cases of recent internal derangement whether from displacement of cartilage or from a loose body, if reduction of the displaced structure has not occurred, this must be attempted immediately, if necessary under an anæsthetic, and two or three separate attempts may be made if the first be unsuccessful.

Reduction having or not having taken place, the next stage in the proceedings is to combat the synovitis which is almost sure to follow.

In fact, an acute synovitis is rather more favourable than otherwise as it sometimes leads to permanent cure more readily than a sub-acute attack. The leg should be splinted and a lotion such as Goulard water and tincture of opium combined should be applied and the patient put to bed. I am not greatly in favour of ice being used in these cases, it seems to me that it must diminish the vitality of the tissues and hinder absorption of fluid, cases, also, of sloughing of the skin following the use of ice have been reported.

It is always bad to start movements of the joint directly after the injury, although massage then has an excellent effect.

This is well borne out by the indifferent results that one gets when patients attempt to 'walk off' sprains, etc., as is so often advocated by 'bone setters'.

The object of the fixations and massage, of course, is to remove fluid from the joint and to allow the loose cartilage to fall back in place and adhere.

In all, three methods of treatment have been recommended for an acutely distended joint, namely —

- (a) Rest with massage, and movements later
- (b) Aspiration, repeated, if necessary, and
- (c) Incision and drainage

Lubbe (25) reports an average stay of 34.6 days in the Seamen's Hospital, Hamburg, for the first method and only 25.5 days for the aspiration method.

Incision and drainage is the method of O'Conor of Buenos Ayres, he washes out all the joints if fluid does not disappear within three weeks, he says "washing out blood clots from an injured joint is a surgical obligation."

It is surprising really the amount of fluid that the knee joint can contain, largely, of course, depending on what bursæ communicate with it.

Tenney (7) injected 14 undissected adult knees with water under pressure of a column of water 2 ft in height, roughly equivalent to the arterial blood pressure at the knee, he found that he could get 80 cc to 200 cc into the joint, the patella always floated after 30 cc of fluid has been injected. He also quotes Lubbe (25), Meisenbach (28) and O'Conor (29) aspirating from 130 cc to 180 cc of blood from the joint.

A point that Bennett lays great stress on is the continued massage of the leg and thigh after an attack of synovitis, especially of the gluteus maximus as this controls the ileo-tibial band of fascia and tends to brace up the capsule.

In Bennett's cases he found 41 per cent were cured by rest and massage alone, without any mechanical support, 19 per cent wore a support from three months to one year, 29 per cent wore a support permanently and the remainder were operated on. No case after the third attack was cured by massage alone, a support or operation was always necessary.

Coming to the question of mechanical supports in case of internal derangement, unfortunately they often are a necessary evil they should be avoided whenever possible, as they lead to wasting of the muscles of the thigh and this, of course, increases the tendency to internal derangement.

Their sole object is to hinder rotation of the leg on the thigh, and only to allow flexion and extension of the knee, in fact, to make it a hinge joint.

Needless to say they are useful only in slipped cartilage cases, loose bodies will be uninfluenced by them.

They are generally supplied with a pad over the internal cartilage to press it into place, this is useless as the most common displacement of the cartilage is into the joint and not outwards. Similarly the small spring trusses sometime supplied are useless. Supports to be effective must firmly grip the tibia and femur, and this in

itself leads to wasting of the muscles encircled. Supporting apparatus should only be used in cases where operation is declined, or there is some reason against it, or in early cases as a temporary measure for a few months where rest and massage have failed to cure the condition.

Passing on to operative treatment, the indications for this are well recognized now, operation should only be performed on healthy individuals, as it is almost entirely an operation of expediency and not of necessity.

The chief indication is (a) general flaccidity of the joint with lateral movement the result of repeated attacks of synovitis. Also (b) cases in which numerous attacks have occurred, disabling the patient and which medical measures have failed to relieve, although there is no marked deterioration of the joint, and (c) cases of expediency, such as early cases occurring in soldiers or sailors, whose living depends on the efficiency of their knee joints. Loose bodies when actually felt should be removed at once, there is nothing to be gained by waiting and the operation is comparatively safe.

I think, that now-a-days everybody is agreed that for slipped cartilage cases, removal of the whole cartilage is the only procedure that does permanent good. Sewing the cartilage to the head of the tibia or cutting off pieces of it have all been discarded as insufficient.

The methods of operation practically resolve themselves into two main groups, the 1st method being, the opening of the joint by a horizontal incision, and the other by vertical incisions, usually on either side of the patella.

Some Surgeons do not make the skin and capsular incisions coincide, saying that, if an L shaped flap of skin be made, so as not to coincide with the incision in the joint, infection is less likely to occur. I have not come across any statistics to support this statement and cannot help fancying that it is just one of those passing decrees of fashion which Surgeons bow down to as readily at times as the general public do to the edicts of the tailor.

The commonest incisions are the vertical ones, on either side of the patella, depending on which cartilage is at fault, the internal one is the most frequently used, and in fact, Bennett says, that with a blunt hook and a pair of scissors it is comparatively easy to remove the external semi-lunar cartilage through this incision.

Another incision is along the anterior border of the Biceps tendon, opening the capsule above or below the popliteus tendon, and a fourth incision along the anterior border of sartorius, opening the joint between sartorius and the internal lateral ligament of the knee joint, through these incisions it is possible to remove the corresponding cartilage, they have no particular advantage beyond being rather better for drainage. Transpatellar operations or their modifications with supra or infra-patellar incision through the tendinous structures are practically

never required for internal derangements of the knee, however, useful they may be for other conditions, they are needlessly severe and reveal little more than may be found through the commonly adopted incisions, and they may leave an undesirable amount of weakness about the joint.

There is one method, however, which I have never seen described, and which, I believe, has the merit of being original, it might be used in those rare cases of multiple loose bodies in the knee or in any condition requiring free exposure of the joint, and that is, a vertical incision through the ligamentum patellæ patella and quadriceps tendon, this incision would have all the advantages of the trans-patellar operation, of thoroughly exposing the joint, and none of its disadvantages of dividing the patellar transversely, likewise it would not be necessary to wire the divided patella, as two halves of the bone would lie in good opposition naturally, or at the most a suture through the tendinous structure above and below the patella would secure it in place. This method I mean to try on the first favourable opportunity if a suitable case occurs.

The after-treatment of simple arthrotomy for internal derangement has no special features, most Surgeons drain the joint for 24 hours, as they find there is less pain and less effusion when this is done. Some Surgeons massage the leg and thigh daily, commencing the day following the operation, most Surgeons move the patella after the fourth day and begin bending the joint after the 7th day, discarding splints at the end of a fortnight and active exercise, such as golf or riding is usually allowed after a couple of months.

Occasionally one comes across a typical case of internal derangement, but on opening the joint no lesion is found. Allingham had 3 such cases in 59 operations and Bennett had 5 in 106 operations, and 2 of Bennett's cases operation was followed by complete cure of symptoms, in fact he explores joints whose only symptom of disease is recurrence of effusion, following some injury, if medical measures fail to give relief after some months' trial, and, in 12 cases where this was done, he found well marked semi-lunar displacement in 7 cases, one case having the cartilage displaced into the intercondylar notch.

In conclusion, Gentlemen, I would point out that the non-success of any of these operations means either a partially or completely stiff limb, perhaps ankylosed in a bad position, or even though happily it is extremely rare, the loss of limb, or of life of the patient.

These operations are not undertaken to save life like operations on the appendix, they are merely operations de luxe purely for the patients' convenience, as if he likes he can always have a rigid splint to fix the knee when all his symptoms cease at once. In fact, some Surgeons have argued that ankylosis, the result of an unsuccessful

ful operation is a happier condition than a flail-like joint the result of much synovitis

One should remember that the unsuccessful knee case remains always as a living eyesore, so different from the unsuccessfully removed appendix safely hidden from sight by its protecting adhesions

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THE INCIDENCE OF TYPHOID FEVER ON CIVILIAN EUROPEANS AND ON NATIVES IN CALCUTTA AND THE IMPORTANCE OF ANTI TYPHOID INOCULATION OF ALL EUROPEAN IMMIGRANTS TO INDIA

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SINCE the days of Byden the great incidence of typhoid fever among young European soldiers during their first few years of service in India has been well known, but the prevalence of the disease among European civilians has been less closely studied on account of there being few places in India where many non-military Europeans reside, and because of the difficulty in collecting accurate statistics concerning them. Now that Sir A E Wright's method of inoculation against typhoid has again been favourably reported on by an expert committee and many soldiers coming to India are being given the benefit of the protection it affords, it

has become a matter of great practical importance to study the prevalence of this scourge among civilian Europeans and to consider its bearing on the advisability of their also being afforded protection before coming to India as a general rule, instead of only very occasionally as at present

Calcutta, as the capital of the Indian Empire, contains the largest collection of Europeans in the country, while the splendid modern European General Hospital, with its private wards for paying patients, is so popular with all classes of the inhabitants that it affords unique opportunities for studying this question, the records of all the cases being carefully and accurately kept and bound. Owing, however, to the difficulties attending the accurate clinical differentiation of typhoid from certain other fevers prevalent in Calcutta, it is of great importance that any conclusions concerning the incidence of the disease should be based on cases the diagnosis of which has been confirmed by the Widal test, or which were absolutely beyond doubt clinically. During four out of the last five years I have carried out the serum tests in all the long continued and remittent fevers at the Calcutta General Hospital which could possibly be typhoid, and have notes and charts of every case in my possession, thanks to the kind permission of the succession of medical officers of the institution. An analysis of this material for another purpose has revealed facts of such great interest and importance regarding the incidence of the disease, that I propose to deal with them briefly in the present paper. Nearly 90 per cent of the cases were verified by the serum test, the great majority having reacted in dilutions of 1 in 100, while the remainder were absolutely typical clinically.

INCIDENCE AMONG INDIGENOUS EUROPEANS AND EURASIANS

In order to show the main facts at a glance the figures obtained by the analysis have been embodied in tables, the first of which shows the age incidence of typhoid in Europeans born and bred in India, the percentages in different age periods being compared with the figures of Dr Curschmann and Professor Osler (1) for as far as possible similar age periods in temperate climates. The patients are derived from a large population of poor Europeans and Eurasians (of mixed European and Native blood) born and bred in India, who form a large proportion of the admissions to the General Hospital, and unlike the native population, readily bring their children when ill. They reside, for the most part, in certain more or less defined portions of the town, but many of their houses are closely intermingled with those of the native population, while their sanitary surroundings are only too often in no way superior to those of the better class natives.

TABLE I

Age Incidence of Typhoid in Indian born Europeans compared with that met with in Temperate Climates

Age	Under 11	11-14	15-20	21-25	26-30	30-40	40	Total
Born in India—								
Males	9	6	13	6	0	3	0	37
Females	5	10	8	7	3	1	1	35
Total	14	16	21	13	3	4	1	72
	30		34		8			
Percentage	41.67		47.23		11.10			
Curschmann's								
Hamburg								
cases	11.02		58.68		30.30			
Curschmann's								
Leipzig cases	9.59		49.40		40.01			
Osler's Mon-								
trical cases	7.73		46.69		45.58			

Note—Curschmann's second age period is from 15 to 24 and his third from 25 to upwards

Sex Incidence—The first two lines of Table I show that the incidence of typhoid on this class of Indian-born Europeans is similar in both sexes, 37 cases having occurred in males to 35 in females, these figures being in marked contrast to the sex incidence among the immigrant Europeans as shown in Table II, among whom there were ten times as many males as females admitted, owing to the great preponderance of male immigrants, a large number of sailors from the merchant fleet visiting Calcutta being included among this class

Age Incidence—Of much greater interest and importance is the age incidence among the Indian-bred Europeans, as it differs very markedly from that met with in temperate climates, as illustrated by Osler's figures of 660 cases treated in Montreal, and Curschmann's two sets of data, one derived from 1626 cases treated at Leipzig between 1880 and 1893 and a large number seen in the Hamburg outbreak of 1887. The percentage of cases between the ages of 15 and 25 do not differ materially in the Calcutta and the other series, except that they are lower in India than in Osler's Montreal cases. When we turn to the incidence among children below the age of 15 we at once meet with a most striking contrast between the tropical and the temperate series, the figures showing 41.67 per cent in the former against 7 to 11 per cent in the latter, being four times as great a proportion among the tropical series as among those of temperate climates. In co-relation with this we find only 11.10 per cent among the Indian born Europeans over the age of 25 in Calcutta (or 13.88 per cent among those over 24 years, the age period of Curschmann's figures) against 40 to 45 per cent in the Montreal and Leipzig series, and 30 per cent in the Hamburg epidemic.

On meeting with such a marked deviation in a tropical series of hospital cases from the known age incidence of typhoid in temperate climates, it becomes necessary to consider how far it may be due to factors producing any abnormality in the admissions, and we must

take into account the schools and orphanages in Calcutta from which a certain number of cases were admitted. I find, however, that even if the extreme measure is taken of excluding from the statistics every case admitted from such institutions the incidence among children under 15 is still 34.37, or over three and a half times more numerous than in temperate climates. Moreover, we must bear in mind the tendency of parents to keep their children at home when suffering from fever rather than bring them to hospital, especially when it is situated some three miles from their homes in a hot climate with no very convenient mode of transit, as in the present instance. The probability that many of the milder cases of typhoid in European children are not brought to hospital is supported by the fact that the average duration of fever in the children admitted is markedly longer than in Curschmann's Leipzig series, and that this is so to a greater extent in them than in the adult admissions to the Calcutta hospital. Taking all things into consideration I am of the opinion that the admissions to the General Hospital very fairly represents the incidence of the disease among the Indian born Europeans of Calcutta, while even if it be granted for the sake of argument that the hospital statistics slightly exaggerate the true incidence among the children, there is still an ample margin remaining to prove beyond doubt that the age incidence of typhoid among this class of Europeans in Calcutta is far lower than it is known to be in temperate climates of Europe and America, the disease being about four times as common among children under 15 and about four times as rare among adults over 25 in the tropical climate of Lower Bengal.

The great importance of this striking fact becomes obvious when we remember that so many of these poor Europeans have been born and bred among precisely the same surroundings as many of the native population of Calcutta, for it has long been suspected, although never proved, that typhoid is especially prevalent among native children. I have previously recorded some evidence as to the occurrence of typhoid among native children, (2) and during the last three years the impression that the disease is not infrequent among them has been much strengthened by serum reactions up to 1 in 100 having repeatedly been obtained in my laboratory with the bloods of such children during attacks of fever clinically like typhoid, and Assistant-Surgeons Gopal C Chatterjee and Gynendia N Mitra have kindly furnished me with the notes of nine such cases in children of 15 or under in which the serum reaction was obtained. In one instance the first mentioned observer saw six cases at once in a village some twelve miles north of Calcutta, no less than five of which were in children under 15, in three of whom serum reactions up to 1 in 100 were obtained. They also inform me that they see quite as many cases of typhoid among native children

as among adults, so that there appears good reason for believing that the age incidence among native children is very similar to that shown above to be the case among the poorer Europeans born and bred in the midst of the native population, although it is possible that the former are somewhat more predisposed to the disease by their meat-eating habits as opposed to the vegetarian diet of most natives.

The very low incidence of typhoid amongst persons over the age of 25 in India at once affords a simple explanation of the comparative rarity of the disease in the native army and in the jails, on which Major A. E. Roberts, I.M.S., in his recent work on the epidemiology of typhoid in India lays great stress as evidence of the relative immunity of natives of India to typhoid, for the great majority of those in such institutions will be over the age of marked susceptibility to the disease in India. Further, the fact that in each of the Presidency towns and in Lahore, that is, wherever there are medical schools and medical wards under pure physicians, typhoid has been found common enough among natives, in spite of native children, who are now seen to be most liable to the disease, being very rarely brought into hospital, so that there can be no doubt as to the frequent prevalence of the disease among natives in all provinces of India, except perhaps in the very damp climate of Assam, while I have verified with the serum test over 50 cases of typhoid in Calcutta alone in natives during the last few years.

THE INCIDENCE OF TYPHOID AMONG EUROPEAN IMMIGRANTS

TABLE No. II—Incidence of Typhoid among European Immigrants

Age	Under 15	15-25	25-35	35-45	45-55	55-65	65-75	75-85	85-95	Total percent age
Under 1 year in India	Males 0	0	0	5	2	1	26	50	91	
1 to 2 years in India	Females 0	0	0	2	0	0	0	2	16	36
2 to 3 years in India	Males 0	0	1	0	1	0	2	8	14	55
Over 3 years in India	Females 0	0	0	0	0	0	0	10	18	18
Total	Males 1	7	16	17	7	3	51	50		
	Females 0	0	1	2	1	0	4			

Table II including all the cases of typhoid among immigrants, shows both the sex and age incidence and also the period after coming to India when they were attacked, and the figures are equally striking, although in a different way. The only child was a boy of 12, who came to India when only two years of age, while one lad of 19 had also been thirteen years in India when attacked by typhoid, so these two cases might very fairly have been included among the indigenous Europeans. Only eight other patients had been over three years in India when they got typhoid, and one of these had suffered from a previous attack earlier in his residence abroad. Thus, we find that only 10 out of the 55 immigrants, or 18.13 per cent

were attacked with typhoid more than three years after coming to India, while if the two who immigrated in their childhood, twelve or more years before being attacked are excluded, the percentage of the remaining 53 cases falls to only 15, the remainder having all contracting the disease within three years of arriving in India. Cases of sailors getting the disease within two weeks of reaching port have been excluded, while I find that if all sailors are omitted, the percentage attacked within three years of reaching India remains almost exactly the same. Further, it will be seen from the table that 67 per cent of the attacks occurred within two years, and no less than 50 per cent during the first year of residence in India.

The incidence of typhoid on recently arrived civilian Europeans is, then, precisely similar to that among their military brethren, and this, too, in a town where British soldiers suffer comparatively little from the disease as compared with regiments in the United Provinces and the Punjab. This important fact needs no comment, for it speaks for itself and pleads more eloquently than any words for the universal adoption of Sir A. E. Wright's antityphoid inoculation in the case of all immigrants to India, whether military or civilian, as a method of protection during the most dangerous first few years in the tropics, and which may now confidently be relied on to materially lessen the incidence, and still more the death-rate of this terrible disease, which so often cuts off the young adult on the very threshold of an active and useful life in the greatest dependency of the British Crown.

SHORT REPORT ON FOUR CASES OF LEISHMAN-DONOVAN INFECTION IN GURKHAS

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In a previous communication Major Granger, I.M.S., 1st/6th G. R., has shown that kala azar occurs in men returning from Nepal, but that this is as rare as generally supposed. The following evidence will, I think, confute. Four cases are forthwith placed on record, all of which occurred in hospital at the same time, the total number of patients in hospital admitted for all causes being under 25. All the cases of kala azar were found in the 2nd/6th G. R. It will be noted that there is a general similarity between the cases, so much so that if puncture of the liver were resorted to oftener, I consider many more would be discovered.

History—In every instance the man had been on leave in Nepal for a period of at least six

months and had there suffered from attacks of fever, lasting for long periods and at times remitting. All entered hospital within three months from their return from leave.

General appearance—(1) Markedly anæmic conjunctivæ (2) A sallow yellowish muddy complexion (3) Enlargement of the spleen and generally of the liver are the most distinguishing features.

Diagnosis—Sir Patrick Manson's dictum is that "Where you have quotidian fever unaffected by the administration of quinine especially if given hypodermically, the case is not one of malaria." In these cases it will be noted that—

(1) Hypodermics of quinine were often followed by a rise of temperature, and were rarely markedly affected by quinine administration.

(2) That though the spleen occasionally diminished in size under hypodermic administration, the general condition of the patient did not improve and that his weakness increased.

(3) Examination of the blood proved negative as far as malaria is concerned, although in one case a subtertian ring was seen.

Having eliminated malaria by the above examinations and result of the administration of quinine, we have before us four main conditions in which enlargement of the spleen is associated with enlargement of the liver, *i.e.*—

(1) Leucocythæmia

(2) Weil's disease

(3) Banti's disease, and (4) kala azar

(1) Leucocythæmia can be at once eliminated by microscopic examination of the blood.

(2) Weil's disease is rare and can be distinguished by the early jaundice, albumen in the urine and hæmaturia.

(3) Banti's disease—the enlarged spleen is accompanied by cirrhosis of the liver.

(4) In kala azar the spleen is always enlarged, but in early cases may not be markedly so. The enlargement of the liver may be so slight as to escape detection. The diagnosis may be established easily and without the slightest danger to the patient provided the following procedure is carefully carried out. The teaching of the London Tropical School is that the liver should always be punctured and the spleen never, as the latter has been followed by fatal results. It also insists that if the Leishman-Donovan bodies are to be seen clearly, the syringe must be absolutely dry, as otherwise the parasites swell up with the imbibition of water and burst, the typical relations between the nucleus and centrosome being then lost.

The all-glass syringe supplied to military hospitals is first thoroughly sterilized by boiling, then washed out by methylated spirits or alcohol to remove the water and facilitate rapid drying. The syringe and needle are gently heated over a spirit lamp till dry. The skin of the patient in the right mid axillary line is disinfected in the usual way by scrubbing with soap and water, the application of turpentine and finally with a 1 in

500 biniodide of mercury solution. A point is taken in the mid axillary line, two fingers breadth above the costal margin and the needle passed inwards and upwards for $1\frac{1}{2}$ to 2 inches. The point of the needle is allowed to slightly break up the liver tissue, by a slight circular motion of the syringe. The piston is then gradually withdrawn and the syringe allowed to fill with blood and broken up liver tissue.

Smears are immediately taken on slides as in the usual way for malaria and the remainder of the contents of the syringe emptied into one or two tubes of a sterilized "citrate of potash and normal salt solution," if the development of the parasite to the flagellated form is desired to be observed. In three days flagellated forms may be observed provided the temperature is kept about 20.

The slides stained with Leishman show many bodies which are not typical Leishman-Donovan bodies, but on search through the films typical parasites will generally be found before many fields have been examined.

Finally, to recapitulate, the chief points leading to a tentative diagnosis of kala azar are—

(1) Recent return from area of infection

(2) Marked anæmia

(3) The failure of quinine to act on a temperature of the "quotidian intermittent," "relapsing intermittent" or low continuous type or markedly in reducing size of spleen.

(4) Enlargement of the spleen always in late advanced cases associated with enlarged liver, but in early cases the liver enlargement may be very slight. The object of this paper is a plea for the more frequent use of liver puncture as an aid to diagnosis of early cases. Advanced cases are of easier diagnosis from the marked debility attacks of epistaxis and other signs, *vide* Rogers' Milroy Lectures in the *B M J*, February and March 1907.

Turning to the cases now placed on record, the Nos 1, 2, 3 and 4 had recently been on furlough in Nepal, an infected area. All the cases were markedly anæmic.

The failure of quinine to keep the temperature low is well seen in the temperature chart No 1, Manbir Thapa. A rise of temperature took place unaccompanied by lung or other morbid complications on March the 19th, on the 11th day after the commencement of daily injections of 10 grains of the hydrochlorate of quinine. The temperature chart of case No 2 shows quinine administration to have no effect on a low intermittent type of fever.

Case No 3 is interesting, in that apparently hypodermics of quinine reduced the temperature to normal in 3 days, with a subsequent slight rise on the 4th day. The temperature chart shows no other rise of temperature. The tentative diagnosis leading to puncture of the liver was based on the fact that hypodermics of quinine, commenced on 11th February 1907,

failed to reduce the size of the spleen. The blood of this case sent to Kasauli for confirmation was not found by them to contain malaria or Leishman-Donovan parasites. The man died in hospital suddenly on 1st May 1907, and portions of spleen sent to Kasauli confirmed my original diagnosis.

Case No 4 is a typical one of kala azar. Quinine was administered hypodermically to try and reduce the large spleen from 23rd February 1907, onwards. Both the liver and the spleen were enlarged. The patient could hardly stand from weakness, was markedly pale and earthy looking, and had recurrent attacks of epistaxis. On 3rd April 1907, the liver was punctured and swarms of parasites were discovered both by myself and Lieut Wells, I.M.S., who was working with me at the time. This was the first case diagnosed, but apparently through some oversight was not confirmed by Kasauli. There is not the slightest doubt, however, that this is a typical kala azar case as slides in my possession show parasites in profusion.

On transfer to Civil on 8th April 1907, I was unable personally to follow the cases*. My thanks are due to Captain Gillitt, I.M.S., who has kindly furnished the further history of the cases and the post-mortem report on Dhanraj Thapa. Before departure from Abbottabad, atoxyl had been ordered for the treatment of these cases. Whether it arrived or what has been done in the matter, I am unable to say.

CASE No 1

Case Sheet

No 3234, Rifleman Manbir Thapa, 2/6th G.R. Age 41. Service 19 years. Arrived in Abbottabad in December after six months' furlough in Nepal. Was unable to perform his duties in regimental lines owing to weakness, and entered hospital with bronchitis on February 23rd.

Previous History—When in Nepal had several attacks of fever and noted that his spleen was enlarged.

Condition on Admission—Temperature 102. Right side bronchitic rales, spleen 2 inches below costal margin, liver not markedly enlarged. Tongue clean. The temperature gradually fell with morning remissions and reached Normal on the 3rd March 1907.

9th March 1907—Temperature suddenly rose to 102.8, lungs normal. Blood examination for malarial parasites—negative. Hypodermics of quinine 10 grs duly commenced.

On the 15th the temperature which was at first of continuous type reached normal. But on the 19th, notwithstanding the continuance of daily hypodermics of quinine a remittent fever commenced. On the 24th of March the blood was sent to Kasauli for examination for typhoid or Malta fever. Result—negative. As quinine produced no diminution in size of spleen and the anemia was pronounced, the liver was punctured on April 4th, and Leishman Donovan bodies found in abundance.

25th April 1907—Condition unchanged. The temperature has remained normal since last note. Diagnosis of kala azar confirmed by Director, Pasteur Institute, Kasauli.

CASE No 2

Case Sheet

No 3987, Havildar Khargjit Thapa, 2/6th G.R. Age 42. Service 20 years. Arrived in Abbottabad in December 1906 after six months' furlough in Nepal. Entered hospital for sprain, was soon discharged to duty. Was again admitted on 11th March 1907, for diarrhoea and enlargement of spleen.

Previous History—Patient states that in Nepal he had a prolonged attack of fever, from which he ultimately recovered and returned to Abbottabad.

Condition on Admission—Patient very weak with marked anemia. Tongue clean. Liver not markedly enlarged. Spleen 1½ inches from costal margin. On examination of the blood for malarial parasites, one subtertian ring was noted. The temperature remained normal till March 15th, on which date a low remittent fever commenced. On the 16th, daily hypodermics of 10 grs of the hydrochloride of quinine were commenced and continued till the 23rd, producing absolutely no change in the temperature. The hypodermics were recommenced on the 1st of April and discontinued on the 4th. The spleen had not decreased in size and was

TEMPERATURE CHART OF MANBIR THAPA

		Date Feb		22	23	24	25	26	27	28																												
				M	L	M	L	M	L	M																												
				—	102.2	101.2	100.4	N	101.2	99.2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N			
Date Mar		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
M		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N				
I		99.2	98.8	N	N	N	N	N	N	102.8	101.6	100.8	100.4	99.4	99.2	N	N	N	N	102.2	101.5	100.4	102.8	N	N	N	N	N	N	N	N	N	N	N				
Date Apr		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
M		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N				
I		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N				

* These cases have since been invalided, many bugs were found in the barracks.

now 3 inches below the costal margin in the nipple line

As quinine produced no result on either the temperature or size of spleen, and the anaemia remained a marked feature, the liver was punctured on April 4th, 1907, and Leishman-Donovan bodies discovered in the blood smears

25th April 1907—Temperature remains normal. The diagnosis of kala azar confirmed from Kasauli

POST MORTEM

Spleen—Greatly enlarged, soft, friable, weight 3lbs 2 oz

Liver—Weight 5lbs 5 oz

Heart—Weight 7½ oz, pale, friable, contracted, empty

Kidneys—Size normal, weight 4½ oz. Capsule non adherent, small hæmorrhages under the capsule

Lungs—Adhesions of both pleuræ. No pathological changes detected in the tissues

TEMPERATURE CHART OF KHARGJIT THAPA

Date Mar	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
T	99.2	99.4	N	N	N	N	N	N	N	99.2	99.4	99.5	N	99.6	98.8	99.2	98.5	99.6	98.8	99.4	98.8	99.6	98.6	99.2	98.8	98.6
										Hypodermic Quinine 10.9	Do	Do	Do	Do	Do	Do	Do	Do								

Date Apr	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
T	N	98.5	98.6	N	N	N	N	N	N	N	N	N	N	N	N
		Hypodermic Quinine	Do	Do	Do										

Normal morning and evening up to end of April

CASE No 3

Case Sheet

No 3311, Rifleman Dhanraj Thapa, 2/6th G R. Age 34. Service 18 years

Arrived in Abbottabad in December 1906, after six months' furlough in Nepal

Was admitted to hospital on 16th December 1906, for enlarged spleen and after a few days' retention, was discharged to light duty, was again admitted to hospital on 10th January 1907

Prior History—Patient states that in Nepal he had two attacks of fever, accompanied by enlargement of spleen

Condition on Admission—Fever 101.4. Marked anaemia. Clean tongue. Spleen enlarged to level of umbilicus and to central line of body. Liver also enlarged both by percussion and palpation

Examination of blood—Negative for malarial parasites, Pelin's bodies and polychromatic red corpuscles were noted

13th January 1907—After three hypodermic administrations of quinine the temperature reached normal

17th January 1907—Slight evening fever, 99.4. Red iodide of mercury ointment and splenic mixture ordered

11th February 1907—Though the temperature has remained normal, the spleen has not diminished in size. Hypodermics of quinine recommenced

4th April 1907—Under hypodermic administration of quinine there has been little, if any, change in the size of the spleen. Pronounced anaemia continues. No rise of temperature. Liver punctured and Leishman Donovan bodies found in blood smears

25th April 1907—Condition unchanged, temperature normal. Diagnosis not confirmed in slide, sent to Kasauli

2nd May 1907—Patient died suddenly at 2 P.M. yesterday from cardiac failure

Intestines—No pathological changes detected. Blood—Very watery, no attempt at clotting. Pieces of liver and spleen and blood slides from these organs sent to Kasauli for examination

17th May 1907—The presence of Leishman Donovan parasites in sections of liver and spleen confirmed from Kasauli

TEMPERATURE CHART OF DHANJIT THAPA

Date Jan	9	10	11	12	13	14	15	16	17	18	19
M	—	✓	N	N	N	N	N	N	N	N	N
T	101.1	100.4	100.8	101.6	101.6	N	N	N	99.9	N	N
			Hypodermic of quinine gr. 100.8	Do	Do						
											Hypodermic of quinine re-commenced on 11th Feb. 1907

No subsequent rise of temperature. Death on 1st May 1907

CASE No 4

Case Sheet

No 4427, Rifleman Kare Thapa, 2/6th G R, aged 24. Service six years

Arrived in Abbottabad at end of December 1906, after six months' furlough in Nepal. Was admitted to hospital, January 30th for bronchitis

Prior History—Patient states that he had suffered from attacks of fever when on leave in Nepal with periods of intermissions

Condition on Admission—Markedly anaemic. Spleen enlarged to 1 inch above level of umbilicus. Moist rales at bases of both lungs. Slight evening fever, 99.6. Blood examined for malarial parasites on 4th, 5th and 8th, with negative results. Treatment, splenic mixture with ung. hydrarg. Iodide over spleen

15th February, 1907—Lungs normal Spleen still enlarged, freely moveable with slight pain on manipulation Tongue clear

23rd February 1907—As spleen not reduced in size hypodermics of quinine 10 gr for four consecutive days and then on alternate days were ordered

11th March 1907—Spleen still enlarged on level with umbilicus anterior border $\frac{1}{2}$ inch to left of umbilicus

17th March 1907—Daily low fever ranging from 99 to 100.2

1st April 1907—Liver enlarged, both right and left lobes with markedly hard anterior edge Though the liver had been noted to be enlarged previously this was

the first date on which the hard anterior edge was noticed

The liver was punctured on 3rd April 1907, and slides showed swarms of Leishman Donovan bodies

Attacks of epistaxis with difficulty controlled, occurred on 15th March 1907, 20th March 1907, 21st March 1907, 25th March 1907, 1st April 1907, 3rd April 1907 and 19th April 1907

25th April 1907—Condition the same Marked sallow anemic complexion, pronounced debility, patient hardly able to stand

Negative report received from Kasauli re slide from liver puncture

TEMPERATURE CHART OF KARI THAPA

Date Feb	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
E	99.6	99.6	N	N	4	99.7	N	99.4	N	98.7	N	99.8	N	N	N	N	N	N	N	98.8	N	N	N	Quinine Hypo dermic, 10 gr	N	N	N	N
																								Do	Do	Do	Do	

Date Mar	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	98.6	98.6	98.6	98.8	N	N	N	N	N	N	N
L	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	98.6	100.2	99.6	99	98.2	98.6	100.2	98.6	99.8	98.6	99.4	99.2	98.6	98.7
		Quinine Hypo dermic, 10 gr													Epistaxis					Epistaxis	Do				Epistaxis						

Date Apr	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	19	20	21	22	23	24	25	26
M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
E	N	N	100.2	99.2	N	N	N	99.2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Epistaxis		Epistaxis	Epistaxis																	Epistaxis				

MALTA FEVER IN BUNDELKHAND

By C. A. SPRAWSON, M.D. (LOND.), B.S.,

CAPTAIN, I.M.S.

MAJOR WIMBERLEY's article on "Malta Fever in the Punjab" in the April number of the *Indian Medical Gazette* amplifies the previous discoveries of the existence of Malta fever in the Punjab and on the N-W Frontier. Isolated cases of this disease have been noted in other parts of India, for instance, one doubtful case in Bengal, but I do not think a series of cases has been reported from anywhere outside the Punjab, nor, I feel sure, in the United Provinces nor in Bundelkhand. The climate of Bundelkhand would seem particularly favourable to the micrococcus melitensis. In its dryness, its barrenness and its rocky hills Bundelkhand resembles the rock of Gibraltar itself, Malta, too, I believe, is of the same nature, and these

features are also those of the N-W Frontier of India and of parts of the Punjab. In the light of our present knowledge of the ætiology a reason for the selection by this disease sometimes known as Rock fever of such unfertile spots may be that in such places goat's milk would seem to be more drunk proportionately by the population than cow's milk. Among the barren rocks of Jhansi, where the cases in question have occurred, the hardier and more active goats can pick up a better living from the scanty herbage than cows, and there are, I think, proportionately more of the former than in fertile places like Oudh.

Moreover, whereas cow's milk is almost invariably boiled before drinking by the class of men, in whom these cases are described, goat's milk, as Major Wimberley has noted in Ferozepore, is never so boiled, either by the Punjab sepoy stationed in Bundelkhand or by

the Bundelkhandi himself, the reason given being that its pooriness does not make it worth boiling to separate the cream as they do with cow's milk.

Of the five cases here recorded, the first four were in sepoy of the 12th Pioneer, a regiment composed of Sikhs and Jats from the Punjab and stationed in Jhansi since December 1904. I have noted in each man's case when he has since been home, *i.e.*, in the Punjab, on leave. As Malta fever is a disease of recurrence in the same subject, one cannot be sure, without a good "previous history," such as one cannot usually obtain from an unintelligent man, that the attack under treatment is the initial attack and this makes it uncertain where infection first took place, but from consideration of the points below mentioned it is seen that three of the cases were in all probability, and one without doubt infected in Bundelkhand.

Case No I—Sepoy P S, a very muscular Sikh, who returned from leave last in August 1906, was admitted on December 23rd, 1906, with remittent fever and pain in both knees, back and wrists, there was a slight swelling of the left knee. There was no history of a previous similar attack. The fever remained remittent for a week, and was then intermittent for another week. He was discharged in January 1907. In this patient I thought I had at last a case of acute rheumatism. I may say en passant, that I have never yet seen a case of true rheumatism in the United Provinces, although it is not uncommon diagnosis. This sepoy was again admitted on May 31st, 1906, with much effusion in the left knee joint, no fever, no history of injury, a blood capsule was then sent to Kasauli, and Captain McKendrick, I.M.S., reported a complete agglutination with micrococcus melitensis in a 1 in 80 dilution. The patient soon left hospital and remained well for five months, when on December 4th, 1906, he was admitted for Malta fever again, the symptoms this time being sciatica on the left side, pain in the lower back and enlargement of the spleen to three fingers' breadth below the margin of the ribs. This last sign may have been malarial, though he had had no fever since his former admission. The reaction to *M. melitensis* was the same.

Case No II—Sepoy H S, a Sikh, who had not been on leave since July 1906, and had been in good health since, was admitted on January 25th, 1907, for orchitis, which rapidly got well. The cause was doubtful, former gonorrhoea being denied. In the light of the next admission there is little doubt the orchitis was a sign of Malta fever. On April 25th, 1907, he was admitted for a very painful sciatica on the left side. His temperature rose to about 100.4 every evening, but was normal in the morning, and remained thus intermittent for twelve days. Profuse sweating was also a feature of this case. He lost much flesh and was discharged in June 1907. His blood was reported by Captain McKendrick, I.M.S., Kasauli, to agglutinate *M. melitensis* completely in a 1 in 320 dilution, partially in a 1 in 640 dilution.

Case No III—Sepoy N S, a Sikh, who returned from Somaliland in 1904, and was on leave from Jhansi in April and May 1906, was admitted on September 28th, 1906, with fluid in the right knee joint. He had no fever and no pain, there was no history of injury nor of venereal disease. He said the same painless effusion had occurred in Somaliland in 1904 (Cp Major Wimberley's case No I, who had recently come from Central Africa). Infection may have taken place there, if his account be true. The blood examined by the Bombay Bacteriological Laboratory gave a marked reaction at 1 in 20 dilution, distinct at 1 in 50, nil at

1 in 100. He was discharged in October 1906 with still some swelling of the knee which gradually subsided.

Case No IV—Sepoy D R, a Jat, who was last on leave in May 1906, was admitted on January 22nd, 1907, with what also appeared very like acute rheumatism. There was no history of any similar attack previously. There was swelling of the left wrist and left knee joints with moderate pain, pain was also felt in the shoulders. Fever was continuous, though not high for four days, then the temperature became normal and the joint trouble disappeared almost entirely. The fever then became intermittent and remained so for eight weeks, the evening temperature being usually 101. There were no physical signs beyond loss of flesh, and a slight stiffness remaining in the left wrist. The malaria parasite was sought for and not found. The blood examined by Professor Hewlett of the King's College Laboratory, London, was reported to react positively in a 1 in 100 dilution with *M. melitensis*.

Case No V—R R Singh, a Thakur, police constable. This case is the most important as the man is a native of the United Provinces and has never left that area. He was home on leave in the Mainpuri district last for one month, previous to July 15th, 1906, and then returned to Jhansi. From August 15th, he began to have fever (no record), with pain in the big points. He also was regarded as a case of rheumatism. The fever is said to have lasted till October 20th, and the joint pain till March 5th, 1907. Then for a week he remained well, and then got pain in his right hip and left wrist and soon after in his left hip. When I saw him first about May 1st, 1907, he still had this pain and some swelling apparently in the swell joints of the left carpus. There was much pain down the back of the right thigh and he could not stand, but as Major Wimberley has observed, pressure over the course of the sciatic does not increase the pain in these cases as a rule. Here, I think, it was in the hip joint. There was also some bronchitis. The blood examined on June 6th, 1907, by Captain Gloster, I.M.S., of the Bombay Bacteriological Laboratory, was found to agglutinate in *melitensis* completely up to a 1 in 50 dilution, it was not tested beyond that. This man is still in hospital and improving in common with the other cases, he has frequently taken unboiled goat's milk.

With exception of case No III none of these men had had any similar attack previously, and so from the consideration of the dates given above, it is almost certain that the remaining four cases were infected in Jhansi, in case No V it is practically without doubt. The disease does not seem to select the young adult like enteric fever, those of the above were sepoy of over eight years' service, no less than three of Major Wimberley's cases were in native officers. It will be noted that the dilutions used in the agglutination tests for these cases are not generally so high as those Major Wimberley quotes, but Lt-Col Bannerman, I.M.S., informs me that he considers "a positive reaction with *M. melitensis* in dilutions of 1 in 50, amply sufficient for diagnostic purposes, normal blood occasionally brings down a precipitate in 1 in 20 with *M. melitensis*, but not if the stock is a good one." As compared with Major Wimberley's cases, mine have been on the whole milder. His case No III which he calls "particularly mild" had fever for 26 days. Case No III of my series might be called ambulatory. With all the extraordinary length of time the disease lasts, its frequency

of recurrence, and at the same time the slight degree, apart from loss of flesh that the general health is affected, have been features I fully agree with Major Wimberley that many of the cases of "chronic rheumatism," "lumbago" and "sciatica" met with in the native army are in reality due to the micrococcus melitensis, to that list I would also add acute rheumatism and orchitis. A few years ago it was suggested that the various peculiar fevers with local names, such as Delhi fever and Peshawar fever might be found to be Malta fever. This has not proved to be the case, nor in the present instance does Malta fever seem to be identical with "Bundelkhand fever" so-called. During two years' residence in Jhansi I have been at some trouble to discover the identity of the disease, one has frequently heard of as "Bundelkhand fever," and amongst sepoys and civil population have sought for cases. But it is a very elusive disease and the more I search the more I think that there is no such clinical entity. Some native practitioners believe in its existence, and these say, it is a fever characterised by a feeling of internal heat in the limbs, a *Haddi ki bukhar*, as the natives term it, with much aching pain, it is said to be obstinate to treatment and to leave the patient thin. Of the very few cases I have been shown as "Bundelkhand fever," two were certainly malaria, the rest I have considered to be influenza. It is true, there is a type of case here that I am unable to classify, and of whose pathology I am ignorant, but that is not the disease spoken of as "Bundelkhand fever."

only. The remaining times he complained of a swelling. On eleven occasions this swelling was situated on the face, and once the right hand only was affected. The neighbourhood of the right eye was affected three times, that of the left eye twice, both eyes once, the right side of the face three times, and the left side twice.*



FIG. 2—SWELLING IN NEIGHBOURHOOD OF RIGHT EYE

The accompanying photographs show the distribution and extent of the swelling, which in all instances occurred only in one situation at one time.

Nothing abnormal was detected in the chest or abdomen. The urine was repeatedly examined, both chemically and microscopically was normal.

On none of the occasions could the swelling be attributed to an insect bite. Under these circumstances the disease was considered to be an example of angio-neurotic cedema.



FIG. 3—SWELLING IN NEIGHBOURHOOD OF RIGHT EYE

A Mirror of Hospital Practice.

ANGIO NEUROTIC OEDEMA

By G. FRANKLIN, B.A., M.B., B.CH. (CANTAB.),
CAPTAIN, I.M.S.

A CASE OF THIS DISEASE WITH SOME REMARKS ON ITS PATHOLOGY

EXAMPLES of this disease are, I believe, of sufficient rarity to warrant the publication of the following case, which came under my observation before I left Shillong in February last. Dham Ram was enlisted in Nepal in 1905-06. He belongs to the citizen class, and was specially enlisted with a view to his becoming one of the regimental drummers.

Prior to his arrival in Shillong, he stated that he had never been ill except occasionally with fever, which was presumably malaria, from which practically all men recruited in Nepal have suffered at some time. He had the typical Guikhar build and was of fine physique. Between March 1906 and January 1907, he came to hospital on fourteen occasions. On two of these occasions he was suffering from malarial fever

These attacks were unassociated with fever or any gastro-intestinal disturbance. I made very careful enquiries with regard to the latter, as to whether any special article of diet, or excess either of food or alcohol brought on an attack, but with a negative result. The man stated that none of his family had ever suffered from a similar disease.

* Another admission since these notes were written - G. F.

The swelling in all cases came on gradually, but there was no periodicity about the attacks, nor did they begin at any special time, sometimes coming on during the day, sometimes at night.

There was no pain, but only a feeling of stiffness and heaviness over the part affected.

On no occasion were there any purpuric symptoms. A variety of drugs were tried, but no drug seemed to affect the disease in any way.

The pathology of this condition is obscure.

Quinke, quoted by Osler, calls it a vasomotor neurosis, under the influence of which the permeability of the vessels is suddenly increased. Undoubtedly this is what occurs, but a vasomotor neurosis does not take us very far. The old idea of neurotic origin for so many processes, both physiological and pathological, is unsatisfactory when one considers the true origin of certain conditions, which were formerly considered to be of neurotic origin. I may refer to the enlargement of the mammary gland in pregnancy, formerly attributed to a nervous connection between the breast and the uterus, and now proved to be due to a chemical substance derived from the foetus and placenta (Stirling), and to various pigmentations of the skin which occur in disease of various internal organs.

It has been suggested lately also that the absorption of a toxic substance from the alimentary canal is the cause of leucoderma (Evans).

From the similarity of this disease to urticaria and its frequent association with gastro-intestinal disturbance, which facts are commented on by most writers on the subject, one would expect that the disease might be attributable to the absorption of some toxic substance from the alimentary canal.

In this particular instance, however, no such conclusion seems possible, although such a possibility cannot be overlooked, though undetected.

Even if the absorption of a toxic substance be the determining cause of this disease it is difficult to explain satisfactorily why the swelling is so circumscribed, as although the parts selected are as a rule those generally associated with cedematous conditions, the swellings by no means confine themselves to those situations, which, moreover, vary from time to time. In this case the swelling was unilateral in all but one instance.

Finally, I would venture to suggest that the absorption of a toxic substance is a much more logical conclusion to arrive at as the cause of this disease than a vasomotor neurosis, and that the curious selection of varying situations for its manifestations may be attributed to a temporarily lowered or altered resistance in the part attacked, but that until the determining factor in the localization of other diseases with skin manifestations of varying distribution

(for example, leucoderma) be demonstrated, it is impossible to suggest any more definite reason.

A CASE OF SPINAL INJURY

By A CHALMERS,

CAPT., I.M.S.,

District Medical Officer, Cuddalore

COORAN, male, aged 25, admitted to hospital on 2nd February 1907 for spinal injury.

History—Whilst employed in carrying bags of groundnut on 31st January 1907, one of these bags, weighing over 100 lbs., fell on to his back, striking him about the level of 7th cervical vertebra. He was unconscious for one hour, and when he regained consciousness he was unable to move his arms or legs.

State on Admission—A well nourished man lying on his back groaning with pain referred to spine on a level with 7th cervical and 1st dorsal vertebra. A close examination of this region failed to detect any deformity or crepitus, but pressure elicited great tenderness over this part. Temperature 97.4. Pulse 64. Respirations 18. The respiration was abdominal in character, but the diaphragm seemed to be doing extra work. There was absolute loss of sensation of lower extremities, body and arms. There was a zone of hyperaesthesia on a level with clavicles in front, and patient said that the pain seemed to radiate out and downwards into the axilla. Sensation above clavicles normal. Total abolition of all reflexes superficial and deep. Paralysis of bladder and rectum. His temperature rose each evening and fell a little in the morning, but on 5th February, 1907, it reached 100°. By this time in spite of careful catheterisation he had developed septic cystitis. The urine was alkaline and smelt horribly—huge shreddy sloughs were passed when the bladder was washed out and at times choked the catheter. On 6th morning a Cock's operation was performed without any anesthetic, local or general, as the parts were quite anesthetic. The bladder was reached through apex of prostate and a silver female catheter tied in and connected by a rubber tube with a glass jar containing carbolic lotion 1 in 50 beneath the bed. After repeated washings with a warm solution of boracic grs. 10 to 1 oz the urine began to clear up. His temperature fell at once to normal, and remained so until 21st February 1907. The relief to patient and to those nursing him was immense, and the little operation undoubtedly saved him from kidney trouble, etc. The small wound gave no trouble and remained healthy.

On 8th February 1907, bedsores began to form over sacrum, but they eventually began to heal under careful dressing and use of an air cushion under buttocks.

11th February, 1907—The cremaster reflex on right side was elicited for the first time. Some sensation in upper part of arms and over thorax. Deep reflexes still absent. Urine clearing up.

15th February, 1907—Sensation returning—burning sensation over region of bedsores which are showing signs of healing at edges.

17th February, 1907—Late rigidity begins—arms and legs somewhat rigid and a touch on calf causes contraction of adductors and flexors of thigh. Knee jerks absent, no ankle clonus. Sensation improving, urine much clearer, bladder wound healthy. General progress satisfactory. Temperature normal. Appetite better. In good spirits. Evidence by talking and laughing.

21st February, 1907—Late rigidity increasing indicating possibly descending degeneration of cord. Great pain in arms and legs. Evening temperature 100.

22nd February, 1907—Bowels moved for first time without the aid of an enema. Evening temperature 99.

3rd March, 1907—Rise of temperature to 101 evening, normal in morning. Rigidity increasing, deep reflexes absent and also superficial except cremaster on right side. Emaciation and wasting of muscles. Urine clear.

4th March 1907—Removed by relatives in spite of remonstrances.

Remarks—The case seems worthy of record, inasmuch as the symptoms pointed to a complete transverse lesion of the cord in spite of the fact that no signs of fracture or dislocation could be found on the most careful examination. The force applied was enormous. Could a heavy bag of over 100 lbs. falling from a height on to a person's back in the region of the lower cervical vertebra cause grave injury to the cord, such as haemorrhage without fracture or dislocation of the spine? The result of Cock's operation was excellent, and it would seem worthy of further trial in such cases.

Indian Medical Gazette

AUGUST, 1907

A MAHOMEDAN CIVILIAN ON INDIAN SANITATION

WE have received an interesting volume entitled *Life and Labour of the People of India*,* written by Mr. Abdullah Yusuf Ali, of the Indian Civil Service. The volume is based on a series of lectures given by the writer at the Passmore Edwards Institute and elsewhere in London in 1905-6, and many of the essays have appeared in various magazines and periodicals.

We have read the whole volume with interest and pleasure, but as medical journalists we are not specially connected with subjects, such as town and village life, student life, industrial problems, civic life, woman's life, etc., so we propose to confine our attention in this notice to the chapter dealing with public health administration, which is based on a paper read before the Royal Institute of Public Health, London.

Mr. Yusuf Ali begins by contrasting the death-rate of England and Wales, which was only 15.4 in the year 1903 with the 34 per mille for India in the same year, that is, if the death-rate of India were on a par with that of England, there would annually be over 5½ million lives saved.

Infant mortality accounts for a very large share of these figures in India, and of course there is famine and plague, but as Mr. Yusuf Ali points out "the severest of our recent famines have been not food famines but wage-famines, in other words, a phase of the Unemployed Question on a gigantic scale."

Plague is a disturbing feature, and on this point we will quote our author's words—

"The disease is not entirely beyond human control. If the people could be educated up to this view, if they would adopt the precautions which have been used with so much success in the lines of the Native Army and in the jails, it would not be a hopeless matter to extirpate plague. In 1903 the number of deaths from plague in the Native Army was 115 out of an average strength of 124,600, and in the jails only 23 out of an average jail population of about 98,000."

"A comparison of the death rate of the jails with that of the free population is most instructive. In one

case we have a high sanitary standard enforced under medical supervision, in the other we have the normal unsanitary conditions of an ordinary Indian town or village. The results are strongly in favour of life in the jails even after all allowance has been made for errors in the vital statistics of the free population and for the particular age and sex limits to which the jail population is usually restricted. It has been

calculated that the mortality of males of the free population of India under ordinary conditions, is at the rate of 25.8 per mille of the age period 15 to 66 years, which may be held to cover the ages of the prisoners. The jails' death rate in 1903 was only 21.3 per mille. The prisoners are drawn chiefly from the lowest and most unhealthy classes of the population. These results are striking enough.

but when we find that for the last few years the death rate of the general population has been steadily rising, while that of the jail population has been steadily falling, we get an incontrovertible testimony to the practical efficacy of the gospel of sanitary science even in India."

Mr. Yusuf Ali then points out that the differences between Europe and India death-rates are not altogether due to "racial tendencies" or the climate. "These drawbacks apply to the jail population yet the jail population shows a constantly improving death-rate year by year."

Our author then goes on to discuss the causes of this "sanitary backwardness." We admit that private and personal cleanliness is often a strong point in the habits of many castes of the native population, but says Mr. Yusuf Ali, there is—

"No co-ordinated effort for public sanitation, no realization of the fact that the individual living in a complex state of society owes duties, sanitary as well as social, to that society, which are not discharged by merely washing the body."

"The people must learn that municipal by-laws for the examination of cowsheds, the disinfection of stables and wells, the supervision of slaughter houses are not merely whimsical or unwarrantable acts of interference with the liberty of each person to do what he likes, but are a necessary complement and condition to that liberty."

Mr. Yusuf Ali then points out that the agencies of public health administration are external to the people themselves, and are worked out and carried out through the paid officers of Government. What then is the remedy? Mr. Yusuf Ali believes the people must be educated, and the rising generation is the one to educate, and he looks for quiet work done by the Department of Public Instruction. No dirty hovel should be used as a school, the school-rooms should be scrupulously clean, properly lighted and ventilated, a teacher who was not neat, clean and

* London John Murray, 1907

orderly should not be promoted, and he would advocate bathing parades and tooth washing parades. In addition there should be systematic medical inspection of schools and systematic hygienic records of the pupils.

In this way our author hopes to accustom the rising generation to modern ideas of health and sanitation.

We can commend this book to our readers. It gives very interesting views on many phases of the life of the peoples of India, and for this reason is well worth the attention of our readers.

INFANTILE MORTALITY IN INDIA

THE Health Officer of Calcutta, Dr J Neill Cook, has submitted a very interesting and valuable report on the terrible infantile mortality in Calcutta, which is deserving the attention of medical men and the general public in other parts of India also.

It is well known to all Civil Surgeons that the infantile mortality in India is far and away in excess of what it should be, and Dr Cook gives a table which shows this in a very startling manner, *viz* —

Calcutta	340 per 1,000 births	
Manchester	157	} average 145.6
Birmingham	154	
Liverpool	153	
Edinburgh	133	
Glasgow	131	

And, moreover, in 32 large towns in the United Kingdom there was an infant mortality of less than 100 per 1,000 births. Dr Cook, however, corrects the figure 340 and calculates that it should be 304 per thousand births which is, at any rate, sufficiently bad.

Of the causes of deaths of infants in Calcutta (and the same will apply largely to other Indian cities) the largest number are recorded as due to "premature birth" and debility at birth. These are largely due to the conditions under which the mothers live and to immaturity of the mother. It is very desirable that the large Maternity hospitals in India should investigate and publish statistics* on this, as it is probable.

[* A compilation for ten years of the very valuable statistics published annually by the Government Maternity Hospital, Madras, would afford much information on this point, and if joined with those of the Eden Hospital, Calcutta (which do not see the light), and other big hospitals would be very valuable.—Ed, I M G.]

as Dr Cook says, that they would furnish a strong argument against the custom of early marriage. Physical immaturity, ignorance, inexperience, and bad sanitary surroundings, leading to the too frequent death of the mothers, are factors in the high infant mortality of Indian towns.

It is difficult to estimate, amid such factors as the above, the effect of the industrial employment of pregnant women. Dr Newsholm has shown that where many women are so employed infant mortality runs high, and in Calcutta the children of cooly women contribute a large proportion of those who die of prematurity and debility. Dr Cook calculates that 200 out of every 1,000 born die in this way within the first three months.

In England bowel complaints and convulsions are most prominent causes of infantile mortality and both are probably largely due to impure milk. These are not such important factors in Calcutta as most mothers suckle their children, but Dr Cook believes that the use of starchy arrowroot "Infants' foods" is increasing in Calcutta and it often happens that when the mother's milk fails, the children are fed on rice-water, "congee," and condensed milk.

Bronchitis which probably includes broncho-pneumonia and tuberculosis figures as an important factor in infant mortality in Calcutta, and is often due to the want of warm clothing in the cold weather, and to lightly rub a little mustard oil into the infant's skin is in no sense a substitute for proper clothing.

Small-pox is another cause in Calcutta, and is largely due to its continual presence and to the fact that so few children are vaccinated till at least three months old. Fevers of all kinds contribute their share, but one factor overshadows all the others, *viz*, tetanus. Tetanus does not appear in the list of principal causes of infantile mortality in England, but in Calcutta in 1906 it accounted for 856 of the registered deaths, of which no less than 723 were in babies under three months old.

We may quote Dr Cook on this point —

"This disease can only be caused by the entrance of the specific bacillus, which is specially common in the dirt of mud floors, into the infant's body through a wound. In Europe where this disease is rare, the umbilical cord is divided with a clean pair of scissors and generally dressed with disinfectant preparations, and the hands of the obstetrician or midwife who performs the little operation are specially cleaned and made as nearly sterile as possible by the use of

disinfectants Amongst the well to do classes in Calcutta trained midwives are employed and the European practice is followed in varying degrees, but amongst the poor and ignorant the native *Dhai* or some old woman who is supposed to be experienced in such matters divides the cord with a bit of bamboo stick that may be picked up from amongst the dirt of the backyard or anywhere about the place, though I understand that in some cases it is carefully selected and prepared The divided cord is then dressed with cowdung ashes and covered with a burnt rag

It appears obvious to me that the tetanus bacillus gains an entrance into the infant's body by the navel from the bamboo or the ashes or the hands of the *Dhai*, or from dust from the floor getting in some way or other, and that the disease would practically disappear with the general introduction of aseptic midwifery This appears a very simple reform, but any interference with the traditions and customs of the ignorant is bound to arouse opposition, especially when a disease is attributed to a *Hawa* or spirit I do not believe it is practicable to reform the practice of the native *Dhai* to any great extent, at any rate in the present generation, and the only suggestions I can make is that the Corporation should appoint a well trained and certificated midwife in every Ward of the City except the few that are mainly occupied by European residences or business houses, whose duty would consist in giving free attendance in the confinements of poor women and instruction to mothers in the simple principles of the care and feeding of infants and general hygiene so far as it relates to them and to their children I have consulted Indian professional colleagues who believe that many poor people would avail themselves of the free services of such midwives, and I am convinced that their employment would greatly reduce the infantile mortality from tetanus and other diseases If the people consider it essential that the cord should be divided with bamboo and ashes applied to the raw surface, our trained midwives could keep bamboo blades cut from the cane and kept soaking in carbolic and ashes from an untrainted source mixed with a disinfectant If there is any doubt about the success of the measure, it might first be tried in selected wards Only midwives of good general education and professional training should be employed in this work, and I do not think that they would be obtainable on any thing less than Rs 250 to Rs 300 a month "

Dr Neild Cook sums up his valuable and suggestive report as follows —

"I have shown that the causes of infantile mortality are—

- (1) The insanitary conditions of the dwelling
- (2) Insufficient nutrition of the mothers combined with manual labour
- (3) Bad midwifery
- (4) Improper feeding and inadequate clothing of the infant

The remedies proposed are—

- (1) General improvement of the city by the proposed Improvement Trust and the removal of minor sanitary defects by the Corporation

(2) The establishment of a charity organization for supplying free meals to carrying and nursing mothers This might be subsidized from Municipal funds, but would mainly depend on donations

(3) & (4) The provision of Municipal midwives who will also act as health visitors, instructing the people in the duties of maternity and the feeding, clothing and general care of infants

As for some of these remedies,—we must await the beginning of the work of the Improvement Trust As for the other suggestions, viz, an organization for free meals to carrying and nursing mothers, and the provision of trained Municipal midwives, we heartily commend them to the people of Calcutta We believe that much might be done if this subject was taken up and worked as the Duffield Fund has been done or like the more recent Minto Fête We are even inclined to think that a "Baby Show" which has been so successful in Rangoon would be useful * Money is wanted, and the free meal organization proposed for mothers cannot well be managed without a subscription list and donations

We heartily recommend these subjects to our readers

Current Topics

THE PRIZE ESSAY ON PLAGUE PREVENTION

In our April number we announced a prize of one hundred rupees to be given to the author of the best Essay on the *Best methods of Prophylaxis against plague*, to be competed for by Assistant Surgeons and Hospital Assistants who are subscribers to the Gazette

We are glad to say that we received fourteen essays from Assistant Surgeons and Civil Hospital Assistants They were not all by any means of equal merit, and after careful consideration we have decided to award the prize to—

1st Class Hospital Assistant

P S RAMACHANDRIER,

of the Mysore Medical Service, who has till lately been a member of the Plague Research Commission, and is well known as the enterprising and energetic Editor of the *All India Hospital Assistant's Journal* The next best essay, which, in many respects, equals that of the prize winner is by 1st grade Civil Hospital Assistant ANNADA CHARAN SARCAR, in charge of the dispensary at Jugdispur in the Shahabad District This essay is particularly valuable on account of the personal experience of the writer, who gives a very satisfactory account of the

[* See the recent Report of Sanitary Commissioner, Burma.—Ed.]

methods which have been found successful in that district for destroying rats. Did space permit we would gladly quote from this essay, which is in every way creditable to the writer.

Other essays worthy of mention are those by—

(1) Assistant Surgeon Guni Prasad Mitra, M.B., of Dibrugarh, Assam, which shows a careful study of the most recent literature of plague,

(2) Assistant Surgeon S. K. Vaidya, of Muzrai Khas, Sind,

(3) Assistant Surgeon Abdul Ghami, of Aonla, Bareilly,

(4) Hospital Assistant V. Veeraswamy Naidu, of Mandalay,

(5) Assistant Surgeon S. C. Basu, of Rawal Pindi,

(6) Assistant Surgeon U. Ray, of Haida, U.P.

The prize, Rs. 100 has been sent to the winner by Messrs. Thacker, Spink & Co.

DENGUE, MOSQUITOES, AND "SEVEN DAY FEVER"

In our June number (p. 230) we quoted the conclusions of a brief article on the Etiology of Dengue written by Drs. P. M. Ashburn and C. F. Craig, since then we have received the full report of the experiments from which the above writers claim it as proved that dengue is a mosquito-borne disease.

The article is a valuable one,* gives a fairly complete history of this curious disease, though except quoting from Fayrer, it almost ignores the history of the disease in India, a strange omission in an account of this typically tropical disease.

Dengue is a disease which has at times prevailed widely in India, the first epidemic recorded appears to have been on the Coromandel Coast in the year 1780, in the year 1824-28 it spread from Calcutta as far inland as Murshidabad, as part of a world-wide pandemic, it again appeared in India in 1836, in 1847, in 1853-54, and what is called the "great pandemic" spread widely in India in 1870 and lasted for some three years. Since the days 1888-89 on the return of Influenza we know of no great outbreak of dengue in India, but sporadic cases are constantly reported, and even in 1905 415 cases of dengue were registered among the British Troops, and 14 cases in the Native Army. It is, however, possible that many of these cases were the "seven-day fever" of Rogers, which has many points of resemblance to dengue, even if we do not accept Capt. Megaw's opinion that they are identical. Dengue is a typically tropical disease, and occurs usually in widespread epidemics, covering large areas of country, in this respect so resembling Influenza that the two diseases have been considered by some to be identical. It attacks a greater proportion of the inhabitants of a place than any other known

disease. It is said to seldom prevail inland, or at great distance from the sea-coast. The transmission is not direct from sick to healthy, and sick men have been removed to places where it did not prevail and the disease did not spread. Medical men attend patients without being attacked, but seldom escape when members of their own household are attacked.

The outbreak on which Drs. Ashburn and Craig base their conclusions occurred from July to November 1906, among the troops stationed at Fort William McKinley about 5 miles from Manila.

Troops which were sent away by sea to Leyte did not convey the disease, the distribution of cases in the soldiers' wards and barracks was erratic, contiguous barracks did not become infected in order, rather the infection followed "the erratic flight of an insect like the mosquito." Every effort was made to transmit the disease by means of fomites and air. Dengue patients and healthy men slept together, ate together and wore each other's clothes, and no spread of the disease in this way followed. The writers conclude that it is not contagious and that it is mosquito-borne. We cannot here follow the writers into their excellent historical account of the disease. So far all attempts at finding a solution of its etiology have been baffled.

Some years ago Graham published some work on this subject, and while giving every credit to Graham as the first promulgator of the mosquito theory, yet we think that his supposed discovery of a protozoon in the blood resembling *babesia bigemina* has been given too much credence. It has been confirmed by no other writer.

The present writers conclude that there is "no visible organism, either bacterial or protozoal in the blood which can be considered as the cause of the disease." Our authors' experiments on 11 volunteers are detailed, they were given intravenous inoculations of unfiltered blood from dengue patients, seven of these developed dengue, one was a doubtful case, and in three there existed an absolute immunity. They conclude that an organism is present in the blood filtrate and they point out the great severity of the attacks of dengue when so produced, a point which has not been explained, nor is easily explainable.

We must now turn to the mosquito experiments. Graham seems to have proved this first, as of six healthy men bitten by infected mosquitoes five developed dengue, on the other hand, Carpenter and Sutton, Guiteras, Cutaya and Agiamonte (all of whom believe in the transmission by mosquitoes) have failed to prove it by their experiments.

Our authors used the *Culex fatigans*, Weid, as the known distribution of this mosquito coincides with the distribution of dengue. This was also the mosquito used by Graham.

* *Philippine Journal of Science*.

The usual method was followed, and one entirely successful experiment is given in detail, the others failed for various reasons.

In fact to be successful such experiments must reproduce many favouring conditions, and, indeed, Schaudinn has recently discussed some of these difficulties. He has shown that certain individuals of a species, which has been proved to transmit a certain disease, are not able to transmit it, owing to the illness of the individual mosquito or to an acquired or natural immunity. It is also probable that the organism does not undergo any development inside the mosquito, the transmission is not like that of the malarial parasite but more like the transmission of plague by the flea, *P. Cheopis*, Rothsch. The dengue parasite apparently is one capable of living in the stomach of the mosquito and retaining its virulence, it is probably introduced into man when the insect bites, "being regurgitated through the oesophagus and the proboscis with the fluid from the stomach." We may end by quoting in full the following conclusions of Drs Ashburn and Craig on the etiology of this disease —

- (1) No organism can be demonstrated in either fresh or stained specimens of blood, with the microscope
- (2) The red blood count in dengue is normal
- (3) There occur no characteristic morphological changes in the red or white blood corpuscles in this disease
- (4) Dengue is characterized by a well marked leucopenia, the polymorphonuclear leucocytes being decreased, while there is a marked increase in the small lymphocytes
- (5) The intravenous inoculation of *unfiltered* dengue blood into healthy men is followed by a typical attack of the disease
- (6) The intravenous inoculation of *filtered* dengue blood is followed by a typical attack of the disease
- (7) The cause of the disease is, therefore, probably ultramicroscopic
- (8) Dengue can be transmitted by the mosquito, *Culex fatigans* (Wied), and this is probably the most common method of transmission
- (9) No organism of etiological significance occurred in bouillon or citiated blood cultures
- (10) The period of incubation in experimental dengue averages 3 days and 14 hours
- (11) Certain individuals are absolutely immune to dengue
- (12) Dengue is not a contagious disease, but is infectious in the same manner as is yellow fever and malaria

The above paper is well worthy of study and especially in view of the discussion which we have reported from time to time* on the question of the identity of dengue and the "seven-day fever" described by Leonard Rogers, as so common in Calcutta and many other places. The description given of the symptoms of dengue in this Manila outbreak strongly resembles, it seems to us, the seven-day fever, and it is worth while to compare the temperature charts. Before deciding that "seven-day fever" is an entity *sur generis*, we think the descriptions of

dengue as given in the paper before us must be carefully considered

THE IDENTIFICATION OF RATS

THE all-important part played by rats in the spread of plague makes it very necessary for all engaged in plague work to know something of the habits of rats and to be able to identify the species concerned in the propagation of the disease. We commend, therefore, to our readers the short and clear account given by Dr W. Hossack in a little pamphlet* published by the Trustees of the Indian Museum.

Dr N. Annandale, the Officiating Superintendent of the Indian Museum, Calcutta, asks for more specimens of rats from all parts of India.

Dr Hossack is also bringing out a large monograph, to be published as a volume of the *Memoirs of the Indian Museum*, and is only delayed owing to the difficulty of preparing the coloured illustrations. In the meantime much can be learned about rats from the pamphlet now before us. It gives clear rules for making body measurements of rats, and hints on the preservation of skins, skulls and specimens. Dr Hossack points out that too much stress is laid upon the colouration of rats, and it is by no means easy to know the exact shade of colour implied for example in the words "rufous" or "rufescent." Dr Hossack gives descriptions of seven rats more or less connected with the spread of plague. These are as follows —

- 1 *Mus rattus*, the black rat
- 2 *Mus decumanus*, the brown rat
- 3 *Nesokia bengalensis*, or Indian mole rat
- 4 *Nesokia bandikota*, or the bandicoot
- 5 *Nesokia hardwickii*—or short tailed mole rat
- 6 *Mus rattus* var. *nitidus* or Hill house rat
- 7 *Mus concolor*—the little Burmese rat

Mus and *Nesokia* are closely allied genera of the subfamily *Murinae*. The common house-rat of India is *Mus rattus*, and it is the most important as regards the spread of plague. *Mus decumanus* is a sewer and a ship-rat, and is confined mainly to ports. It came probably originally from China, but is now the common brown rat of England. It is a large heavy rat and has a bicoloured tail. *Mus decumanus* has often been confused with *Nesokia Bengalensis*, the Indian mole rat. The latter is also a big rat, but has very coarse fur and characteristic long black bristles on its back. Dr Hossack tells us that this Indian mole rat has a very wide distribution all over the Indian peninsula, but is more common in the damp alluvial tracts.

We commend this useful pamphlet to our readers. All employed on plague prevention will find it very useful.

* Vide *J. V. C.*, March 1906, p. 88, November 1906, p. 429, and December, p. 496.

* Aids to the Identification of Rats connected with Plague, by W. C. Hossack, M.D., Plague Department, Calcutta. Pioneer Press, Allahabad. Published by the Indian Museum.

THE MISUSE OF THE TERM RHEUMATISM

WE direct attention to the letter from Dr Tertius Clarke, of Perak, in which he criticises the paper we published by Dr Banerjee of Udaipur in our issue for last March.

Dr Banerjee himself will admit that the elaborate classification he put forth in his paper is little more than a classification of the apparent causes of symptoms of pain, etc., generally if loosely called "rheumatic." That Dr Banerjee is not alone in this (loose) use of the term "rheumatism" is evident from the fact that a reference to Table LIII of the 1905 report of the Sanitary Commissioner, India, shows that under the head "Rheumatic fever" there were 27 cases returned among European troops, 39 among the native troops, and 8 among the prisoners, whereas under the term "Rheumatism" there were 894 cases returned among the British troops, 1,421 among the native troops, and 962 among the prisoners.

As long as the term "Rheumatism" is put down as a heading in the *Nomenclature of Disease*, issued by the Royal College of Physicians, London, this term, vague though it be, will be used, and indeed it is difficult to see under what other heading many cases are to be returned. Where the cause is known, it is easy enough, but in many cases the cause is unknown or only guessed at.

As regards the question of acute rheumatism or "rheumatic fever" we think there is but little chance of any serious confusion. True, acute rheumatic fever is as Sir Wm Church (Allbutt's new edition, Vol II, part I, p. 594) says a disease "more easily described than defined." He writes "no line of separation can be drawn between the cases classified as sub-acute and acute," and in his article he considers *rheumatic fever as equivalent to a synovitis accompanied by pyrexia and generally multiple*, and in the bacteriological portion of the same article Dr W Bulloch quotes five different theories as to the microbe or microbes concerned, and he points out that Poynton and Payne's *diplococcus rheumaticus* is by no means universally accepted, and it does "not fulfil all or indeed any of Koch's so-called postulates" though he agrees that "*what clinicians call rheumatic fever is probably an infective disease the virus (of which) is not known*." It is a question to what extent the disease which "clinicians call rheumatic fever" which is well known in Europe, and which is frequently followed or accompanied by cardiac valvular disease, is common in India. In our own experience we have very seldom seen a real genuine case. Others, however, have a different experience, and if we accept Sir Wm Church's definition above of a "synovitis often multiple accompanied by pyrexia," we must admit that it is not rare, but what we have always maintained is that the clinical picture of "rheumatic fever" (what, in Dr Bulloch's words, "the clinicians call rheumatic

fever,") is rare in India* and in this Dr Clarke from his experiences in the Malay Peninsula agrees. The opinion of physicians in India is invited on this point. Many cases in India and elsewhere of chronic rheumatism are due to mild Malta fever.

ANKYLOSTOMIASIS IN PORTO RICO

FOR some time past a special Commission has been working at the causation of the grave form of anemia so common in Porto Rico. We have before us a report by Captain B K Ashford, M.D., and passed Assistant-Surgeon W W King, M.D., Members of the Commission (*Boston Medical and Surgical Journal*, April 4th, 1907), in which they describe the extreme prevalence of this parasitic infection and give some valuable observations on the pathology of the disease.

In Porto Rico it is stated that three-quarters of a million persons are infected, and that 70 per cent are suffering from the infection in a greater or less degree. It is estimated that the total mortality of the island has been increased by over 20 per cent from this cause alone. The average hæmoglobin of those complaining of symptoms is 40 to 45 per cent †.

It is now generally believed that the larvae of these nematodes find their way through the skin (causing what is variously called cookie's itch, *pana ghao*, dermatitis, and in the Cornwall mines "bunches"), then into the lymph capillaries or small veins, next to the lungs, where they undergo their third ecdysis, and "then wriggling up the mucous secretion in the bronchi and trachea, turn back at the glottis and pass down the œsophagus into the stomach, and intestines" (so Allbutt, *loc cit*, p. 598). This "ground itch" is well-known in Porto Rico under the Spanish term *Mazanava*.

It is known that the species of nematode which brings about this condition is, in America, now called *Necator Americanus* (Stiles), or *uncinaria*, and Dr J W W Stephens has shown (*Indian Medical Gazette*, October, 1906) that this *Necator* as well as the *Ankylostoma duodenale* are both found in Assam. It is generally held now that the damage done by this worm is not due to its sucking of blood, but rather to the excretion of a toxin having a

* Sir Wm Church (*loc cit*, p. 595) considers the disease "rheumatic fever" ubiquitous—in all parts, Arctic and torrid zones, and he gives in appendix on the prevalence of "rheumatism" and "rheumatic fever" in the army. In the year 1903 he quotes 11 cases of rheumatic fever in the army, at Gibraltar, 4 at Malta, 86 in the troops on field service in S Africa, two in S China, and 35 cases in India. Dr Clarke will be interested to see that Sir Wm Church states (Allbutt *op cit*, p. 640) that 53 per thousand of admissions of all diseases in the Straits Settlements were for "rheumatism." In hospitals in the United Kingdom the admissions for "rheumatic fever" amount to about 1 to 6 per cent of the total admissions for medical diseases, *Church loc cit* p. 642. Many supposed cases in Malta or Gibraltar may be cases of Malta fever.—ED, I M G.

† For latest observations on blood in these cases, consult Allbutt's *System*, Vol II, pt II, p. 902.

hæmolytic effect. Before quoting the conclusions arrived at by the above members of the Porto Rico Anæmia Commission, we should note that though some 70 to 80 per cent of the inhabitants of Biñan harbour this worm (and the same is true of many other districts in India), yet it is comparatively seldom that one can find a case of true cachexia due to this cause alone, so as to justify the term "ankylostomiasis" being applied to it, yet it must be admitted that a vigorous well-nourished Biñan peasant will withstand a larger invasion of this blood-destroying worm than a wretched halfstarved negro or Porto Rican "Jibaro".

The following are the conclusions referred to above —

Conclusions—Our conclusions are not based alone upon this series of cases, but embrace a much larger number of observations, too scattered to place in tabular form. It is believed that the data contained in the series of 94 cases represent what is generally found before and after the administration of thymol and beta-naphthol.

1 Albuminuria with tube casts is a very common phenomenon in uncinariasis.

2 It may be present in light or severe cases, more constant in the latter.

3 Albumin is present generally in very slight traces, not discernable by the Heller nitric acid test, but is usually accompanied by a few casts.

4 The casts are generally hyaline, finely granular and fatty, rarely epithelial unless the epithelial cells are very fatty when they are classed as fatty casts. Blood casts are very rare.

5 Albumin may be present in light and heavy infections.

6 Albuminuria with casts in uncinariasis should be regarded as the evidence of a degenerative process in the kidney, not as in inflammation or, more specifically, a nephritis.

7 Both thymol and beta naphthol can act as renal irritants, especially in the presence of this condition of the kidney.

8 While ordinarily these drugs cause an increase in albuminuria and often bring it about where before it was absent, their effect is temporary, causes no symptoms in the vast majority of cases and is rarely of importance.

9 There is almost always an absence of inflammatory elements after the above mentioned increase in albumin.

10 Very rarely they may set up a severe nephritis.

11 The cases herein cited show that both drugs seem to have an equal power to increase in albuminuria with tube casts, but our experience over a large number of cases demonstrates to us that, all things considered, beta naphthol has a very much less favourable action on the kidney and that it is not as safe as thymol for this reason although its depressant effect is not so marked. Thymol has not, in our experience, caused fatal collapse.

12 Albuminuria does not always seem to depend upon the grade of anemia.

13 Albuminuria and the changes found in the kidney after death may be due to a specific toxin elaborated by uncinaria but where severe anemia exists such an explanation for the condition is hardly needed.

14 Uremia in Porto Rico is not uncommon, but is rarely seen by a physician and is confused by the *pebaros* with "nervous attacks" of all kinds, particularly with the very common hysteria major. Epilepsy is not uncommon, and we are persuaded that sometimes this diagnosis would suffer a change on examination of the urine. We know of several instances where there was good ground for believing that the attacks were uræmic in character.

15 Emphasis must be laid on the fact that the albuminuria of uncinariasis is extremely irregular, coming and going without the slightest apparent reason.

16 Renal accidents from the use of the anthelmintics under consideration are not generally serious and are still more rarely fatal. The great severity of the present epidemic and the high mortality should make us disregard the remote danger to the patient from the use of thymol.

17 The use of beta naphthol should be restricted to very few doses and its administration should be limited to patients in extreme grades of the disease, on account of its less depressing effect on the vital centres, until enough uncinaria are expelled to create a favourable reaction and enable us to use thymol. However employed, a dose of 2 gm should not be exceeded and no more than three successive doses given, one each week.

In a recent number of the *R A M C Journal*, Lt-Col W B Leishman gives an account of the recent progress of antityphoid inoculation in the army. We all know how the early results were good, but in the confusion of the South African War and owing to the outbreak of typhoid in the Orange River Colony, the system fell into some disrepute and was suspended for some eighteen months. As a result of the Committee under Dr C J Martin, of the Lister Institute (recently on the now dissolved Plague Commission in India), much new research work was carried out. This Committee have recommended the renewal of the inoculation, they have fixed the dosage and they recommend the use of two inoculations, with a ten-days' interval between the first and second. Another sensible suggestion was carried out in the attachment of a special medical officer to each regiment going on foreign service, who was to remain with the regiment for three years and collect all possible information as to the degree of protection conferred on the inoculated men in the regiment. Unfortunately only eight medical officers were appointed, but it is hoped that information will soon be available as to the results. In one instance, indeed, already some evidence is available. The 17th Lancers were exposed to a severe epidemic of typhoid soon after its arrival at Meerut in 1905. There were in all 63 cases, and no less than 61 were in the non-inoculated and only two in the inoculated and these two, unfortunately for themselves, had refused the second inoculation and consequently, according to recent views, had not received the full measure of protection.

This is a striking instance of the great protective value of antityphoid inoculation, and we are glad to hear that the Principal Medical Officer, H M's Forces in India, has indented for 15,000 doses of the Vaccine, and H E Loid Kitchener has shown himself keenly interested in this method of protecting the troops.

Of making new societies there appear to be no end. We have received a notice of the formation of a new society for the study of

tropical medicine and hygiene, and only last month we chronicled the establishment of an United Services Medical Society.

With a society for the study of tropical diseases, we have strong sympathy. Sir P. Manson will be the first President and Prof. Ronald Ross, the Vice-President. The Council is made up chiefly of members of the staff of the two tropical schools in London and Liverpool. We think it a pity that there should be two societies, such as that of Tropical Medicine and the United Services Society. Most I. M. S. Officers at home will here perceive a "divided duty" and probably men on study leave will join one or other society, as their inclinations dictate.

THE "Oitol" test to determine whether milk has or has not been boiled (above 70°C) is often referred to in the recent reports of the Commission on Mediterranean Fever. As this test may be of use in this country, where many careful householders boil their milk, it is here given.

It was introduced some years ago by Saul, and depends on the fact that the addition of Ortho-methyl-aminophenol Sulphate (or "Oitol" as the impure salt, used in photography, is called), to raw milk in the presence of nascent oxygen gives rise to a buckled colour within 30 seconds of mixing, whereas with milk which has been heated up to or above 70°C ($=158^{\circ}\text{F}$) no change is observed. In practice the test is carried out by adding 1 cc of a freshly prepared aqueous solution of Oitol (1 per cent) to 10 cc of milk in a test-tube and then adding one or two drops of hydrogen peroxide.

We have received Parts V, VI and VII of the Reports of the Commission appointed by the Admiralty, the War Office and the Government of Malta for the Investigation of Mediterranean Fever, under the supervision of an Advisory Committee of the Royal Society, which contain an account of the successful work of this Commission up till April 1907. We have in a recent issue given a résumé of the recent work and need not here do more than refer to these valuable reports.

An admirable book, one for all medical men to read, is Dr. Harry Campbell's book on Treatment. It deals with the education of the physician, his personality, and has chapters on consultations, on quackery, the *vis medicatrix naturæ*, fads and faddists, psychotherapeutics, clothing, exercise, food, rest, etc. It is a charming book and its price 5s brings it within the reach of all. The publishers are Messrs. Baillière, Tindall and Cox.

OUR attention has been drawn to the prospectus of the medical school attached to the well-known

Hospital for sick children in Great Ormond Street, London. The members of the staff attend daily either at 9 A.M. or 2 P.M., and every week a practical clinical lecture is given. A three months' ticket costs three guineas, and a perpetual ticket, five guineas. There are 222 beds in the hospital, and there is a very large out-patient department. We are informed that the Dean will be glad to sign certificates of regular attendance. The attention of officers going home on study leave is directed to this well-known hospital. All information can be obtained from the Secretary.

Reviews

The Diagnosis and Modern Treatment of Pulmonary Consumption—By ARTHUR LATHAM, M.D., F.R.C.P. Third Edition. Pp. viii + 260, demy 8vo. Price 5s net. London: Baillière, Tindall and Cox, 1907.

NOT very long ago we had the pleasure of recommending this book to our readers, and now a third edition, dated March 1906, lies before us. As one of the Physicians at the Brompton Hospital, and as the author of the prize essay on the election of the King Edward VII Sanatorium, Dr. Latham has a reputation as an authority on diseases of the chest, which makes a book by him both valuable and authoritative. We have previously commended this book to our readers, and can do the same for the third edition.

The book makes no pretension to be an exhaustive study of tubercle of the lungs. It deals first with the varieties of pulmonary disease recognizing two chronic forms, the fibrocaseous or ordinary form, and the fibroid form, and of acute forms, the broncho-pneumonic, the lobar pneumonic, and acute miliary tuberculosis. In England it is said that one person out of ten dies from this fell disease, in India, or rather in Calcutta, it is said that 1 in 14 die of consumption, and its serious prevalence in most parts of India is nowadays well recognized, though even a dozen years ago it was scarcely recognized to be the serious factor it is in Indian vital statistics.

Dr. Latham's second and third chapter deal with the diagnosis of all forms, the fourth chapter is devoted to the avoidance of reinfection, and thoughtful chapters on the principles of the open air treatment as carried out in the sanatoriums in various parts of Europe. The principles laid down by Brehmer are detailed and discussed and the "exposure" bogie is well handled, it is shown that patients do better in winter than in summer, and incidentally the remark (which we agree with *qua* India) is made that "tuberculosis runs a relatively

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rapid course in warm climates" We strongly commend this valuable chapter to the consideration of our readers

Another most useful chapter is on the details of carrying out the open air method at home, and Civil Surgeons in India will get many useful hints here The questions of food and exercise are very clearly dealt with, and though Dr Latham admits that there is no medicinal remedy which has any claim to be regarded as a specific for tuberculosis, yet he shows the value of drugs in the relief of symptoms, and his clear rulings on the value of the *old* and the *new* "Tuberculin," are very useful and important The value of serums such as Marmorek's is discussed, and the difficulty of estimating its value is shown

The present volume deals clearly with the value of the opsonic index in diagnosis, the difficulties of technique and the ever-present "personal equation" are recognized, and, on the whole, we note that Dr Latham is not inclined to put a high value on the use of the opsonic index as an aid to the diagnosis of early consumption An appendix gives full details of the methods of determining the opsonic index

On the whole, we can confidently recommend this small book, its price, only 5 shillings net, places it within the reach of all, and all interested in this fell disease are recommended to read this book

Inflammation.—By J GEORGE ADAMI, F.R.S
London Macmillan & Co

THIS is a reprint from the well-known article by Professor Adami in Allbutt's *System of Medicine*

Professor Adami rightly considers that a knowledge of the inflammatory process is the foundation of all pathology, and as his article has been accepted as the standard for several years, he is fully justified in presenting the up-to-date and improved version in a form which will make it accessible to the student

The author does not claim to have said the last word on the question of inflammation, but he does claim to have stated all the most important known facts connected with the subject and to have drawn from them the deductions which seemed most rational, and all who read this book will agree that his claim is well founded At the present moment when the new and important work of Professor Wright on opsonins has just succeeded in making itself known to the profession in general, but has not yet found its bearings in relation to the various problems of pathology, there seems to be a prospect that the subject of inflammation will have to be rewritten within the next few years

Probably Professor Adami will be the one to undertake this work, but, in the meantime, his handy little volume will be found to be a

fascinating and instructive introduction to pathology, and while it is of special value to the student who is entering on the practical part of his medical studies, it can be recommended to the practitioner both for its interest and also for its value in suggesting rational lines of treatment

A Manual of Pathology.—By GUTHRIE MCCOY
NELL, M.D. Published by Messrs W B Saunders

THIS is a small student's text-book, which occupies a place intermediate between the highly condensed 'cram' book and the ordinary text-books which discuss more or less fully the questions dealt with

It is not a suitable book from which to obtain one's first introduction to pathology, but for the student who wishes to make up the essential facts of the subject for examination purposes, it would probably be very useful

It will also be of service to the Medical man who wishes to bring his knowledge of pathology up-to-date without reading one of the more voluminous treatises, and who wishes to find information on the subject of staining technique and the more practical laboratory methods

The author does not claim any originality for the book, and, indeed, in a text-book of this stamp original views are not called for, the latest views on debated questions are also out of place in a small text-book, but a parasite of the proved importance of the Leishman-Donovan body might have received at least a passing reference Wright's work on the opsonins might also have been briefly referred to

The book is well got up and the illustrations are good, but the feature which is likely to appeal most strongly to residents in the tropics is the handy size of the volume and the limp binding

It is a pity that no publisher has had the enterprise to issue a Tropical Edition of some of their more popular large text-books, a small edition printed on thinner paper than usual and with limp covers would probably weigh not much more than half as much as the ordinary heavy tome which the publishers, and specially the American publishers, delight in In the case of a few books the heavy glazed paper may be necessary for the perfect reproduction of the illustrations, but excellent results may be obtained by using a paper of medium thickness and the resulting saving in weight and bulk would be much appreciated by men who have to pack up their belongings and undertake long journeys at frequent intervals A handy volume is also much more likely to be read at times when the heat is so enervating that the man who lies in a long chair and reads is considered energetic, and we would suggest to the publishers the advisability of considering whether they could not make some concession to the special requirements of their customers in the tropics

Chemical Pathology.—By H. GIDEON WELLS, Ph.D., Asst. Prof. of Pathology in the University of Chicago. W. B. Saunders & Co.

THIS book may almost be said to mark the beginning of a new epoch in Pathology, not from the fact that it throws any great amount of new light on the subject, but from the fact that it is the first attempt to collect in available form the vast amount of scattered work that has been done of late years on the chemistry of pathological processes.

The subject of Chemical Pathology is in its infancy, but it is fairly certain that the future of Pathology and even of Medicine will be closely bound up in it. Hitherto Pathology has been concerned chiefly with morphological questions, and rightly so, for the morphological problems are much easier to solve than the chemical, but now that the structure of diseased organs has been fairly well worked out, the investigator of the future will have to tackle the more difficult task of finding out what changes in metabolism are associated with the changes in structure that are met with in disease.

The ultimate goal of the worker in this line is the discovery of the chemical composition of the various toxins and the synthetic preparation of the materials which will neutralize them, but in the meantime there is a vast amount of work to be done which in itself may not appear to yield any results of value, but which is absolutely necessary as being the foundation of the practical achievements which Chemical Pathology is sure to accomplish in the future.

This book cannot fail to be of the greatest service to any one who proposes to work on some of the problems of Chemical Pathology, not only by enabling him to get a general knowledge of the work that has already been done, but also by providing him with abundant references, so that he can refer to the original articles of the workers in the particular branch which he proposes to take up.

It is not one for the average student, as most of the questions dealt with which have a practical bearing on medicine are discussed at sufficient length in the ordinary text-books of Medicine and Pathology.

The book is got up in the excellent style that is characteristic of the Saunders firm, but, as there is not a single illustration, there seems to be no reason for adopting so heavy a paper and thereby adding unnecessarily to the size and weight of the volume.

A Manual of Normal Histology and Organography.—By CHARLES HILL, Ph.D., M.D., Asst. Professor of Histology and Embryology, North Western University Medical School, Chicago. Illustrated. Pages 463. Publishers W. B. Saunders & Co., Philadelphia and London, 1906.

THIS handsome little manual of histology and organography is written in the interests of ele-

mentary students, the fundamental facts of histology being presented in as clear and concise a manner as possible, theories are only advanced in order to simplify the facts and aid the memory.

The figures and illustrations have been selected with considerable care and assist very materially in explaining the text. The chapter on the oral cavity is particularly good and the figures illustrating the text most excellent. Laboratory technique is not gone into to any great extent, but the fundamental principles are laid down.

The volume is handy, practical and exceedingly well turned out by the publishers. We can thoroughly recommend it to junior students as a most useful book to work with in the laboratory.

Ulceration of the Cornea.—By ANGUS MACNAB, B.A., B.Sc., M.B., Ch.B. F.R.C.S., Chief Clinical Assistant, Royal London Ophthalmic Hospital, London. Baillière, Tindall and Cox, 1907. Pp. xiv and 196, 20 Illustrations. Demy 8vo, 5s net.

THIS work states the present position of our knowledge regarding corneal ulcers. It is dedicated to the author's teacher, Professor Th. Axenfeld. It is a really excellent monograph, written in a thoroughly scientific spirit, bringing together all that is known on the subject, and working out the classification and recognition of corneal ulcers on bacteriological lines, thus evolving a certain amount of order out of what has hitherto been chaos. The author well says 'Any practical method of treatment must depend on a diagnosis which can readily be made. A complete and thorough bacteriological examination of every corneal ulcer is not always practicable, the clinical features, however, of the various bacteriological classes are sufficiently constant to be used as a means of determining the classification in most instances, and in doubtful cases the question can almost always be settled by staining and examining a film—a proceeding well within the power of all. Ulcers are divided into (A) Traumatic, (B) Primary and (C) Secondary Corneal infections, and (D) Ulcerations due to tropic disturbances, desiccation or degenerative processes. The primary corneal infections include (1) pneumococcal ulcers (typical hypopyon or serpiginous ulcers), (2) a typical hypopyon keratitis, and (3) Mooren's ulcer rodens. Secondary corneal infections include (1) diplobacillary ulcers, (2) a Zui Nedden's infectious marginal ulcers, (3) ulcers occurring in acute conjunctivitis (Kock-Wull's strepto-coccal and staphylococcal conjunctivitis), diphtheria and gonorrhoea, and (4) ulceration in conjunctivitis eczematosa.

The chapter on pneumococcal ulcers is the best in the book, indeed, it is the best we have read anywhere and is a model of what such an account should be. The final chapter is on operations and contains a very good account of Axenfeld's method of excising the lachrymal sac.

The Sleeping Sickness Commission's Reports

IN Report No VIII of the Sleeping-Sickness Commission of the Royal Society, dated February 1907, Lieutenant A C H Gray, R A M C, and the late Lieutenant F M G Tulloch, R A M C (who fell a victim to this disease), give a valuable account of the work done up to date. We quote the following conclusions which are thus summarized in the Report —

(1) That trypanosomes are constantly present in the lymphatic glands of early and late cases of trypanosome infection, and can be found there on any day of the disease

(2) That the subsequent incidence of sleeping-sickness is much higher among natives in whom gland-enlargement has been previously noted than among those in whom no such condition has been found

(3) That trypanosomes are not present in the cerebrospinal fluid of very early cases of trypanosome infection, but that these parasites can always be found there in the late stages of the disease

(4) That sleeping-sickness is the last stage of trypanosome infection and is always fatal. The after-history of cases noted some three years ago by previous members of the Commission has been carefully followed out and only one man now certainly remains alive

(5) That trypanosomes can nearly always be found on post-mortem examination of cases of sleeping-sickness provided that such examination is made within a few hours of death

(6) That the treatment of trypanosome infection with drugs does not hold out much hope of success even in early cases

(7) That chimpanzees are readily infected with the trypanosome of sleeping-sickness

(8) That there is but one human trypanosome in Uganda and that it is identical with trypanosoma gambiense

(9) That native dogs in an area of sleeping-sickness have been found to be infected with a trypanosome most probably identical with that of sleeping-sickness

(10) That the drug treatment of artificially infected animals with almost poisonous doses has proved of little value

(11) That the trypanosome of "Jinja cattle disease" if not *Trypanosoma Brucei*, is a very closely allied species

We note that sleeping-sickness is "surely spreading"

In the early diagnosis of this fell disease the occurrence of enlargement of the glands is very important, especially the posterior cervical glands, by careful gland-puncture with a hypodermic syringe trypanosomes have over and over again been found in persons whose blood and cerebro-spinal fluid has been examined and nothing found

This report also gives a very complete description of the anatomy of the carrier of *Trypanosoma Brucei*, viz, the tsetse fly, *Glossina*

palpalis, by Prof Minchin of University College, who joined the Commission for some months

The spread of sleeping-sickness depends upon (1) the presence of *Glossina palpalis* in considerable numbers, (2) a thickly gathered population, (3) and free intercommunication. Sleeping-sickness can be carried wherever an infected person travels, that is anywhere, and in this way wherever *Glossina palpalis* exists the disease may spread. Quarantine is impossible owing to the long period of time during which the infection may be carried, on the other hand, it is said that the *Glossina palpalis* can only carry the infection for 48 hours, moreover, as the trypanosomes are scarce in peripheral blood, the fly cannot always acquire the infection, and it soon ceases to be a danger unless constantly reinfected

We have also received No VII Report which is by Dr F W Mott, and is concerned with his histological observations of material from cases of sleeping-sickness. He states that the disease is characterized by a chronic polyadenitis (as described by Captain Greig, I M S) which is subsequently followed by a chronic inflammatory change in the lymphatics of the brain and spinal cord

A Manual of Obstetrics — By A F A King, M D Tenth Edition, enlarged and thoroughly revised 12mo, 688 pages, with 30 Illustrations and three coloured Plates Cloth, \$2 75 net Lea Brothers & Co, Philadelphia and New York, 1907

THE fact that this manual has already reached its tenth edition is sufficient proof that it has met with a favourable reception from the class for whom it was written. On the whole, we have formed a favourable impression from a perusal of the book, and in the main it appears up-to-date and satisfactory, though it is of rather unequal merit, certain portions being treated in a meagre, and to our mind not altogether satisfactory manner. In some points the treatment given is not that usually taught in English schools, nor do we think it is always likely to meet with the approval of English teachers, for instance, in the use of alcohol as recommended by the author in certain complications. We note the author still gives the old and incorrect account of the formation of the Decidua Reflexa

In the chapter on the conduct of a normal labour unnecessary frequency of vaginal examination seems to us to be recommended, and no warning is issued against this method of examination being adopted more often than is absolutely needed. In the chapter on Operative Midwifery no mention is made of the more modern form of Axis Traction Forceps, such as Milne Murray's and others of somewhat similar design. Nor is mention made of Pubiotomy, an operation which possesses obvious advantages over, and seems to be rapidly replacing that of Symphysiotomy. The combined Cranioclast and Cephalotribe is never mentioned, though this instrument is probably better than either used

separately, nor is Ramsbotham's sharp hook mentioned, by the use of which decapitation can undoubtedly be performed with much more ease and celerity than with Braun's blunt hook. Yet in spite of these minor defects, the work will doubtless prove a useful introduction to the subject, and as such may be recommended to the student when commencing his study of Obstetrics. The printing is clear and good, and some of the illustrations are excellent, though others are poor, and in many instances out-of-date, *e.g.*, those of many instruments which are represented as having wooden handles. This ought to be rectified in future editions.

A Text-Book of Diseases of Women—By J. CLARENCE WEBSTER, B.A., M.D. (Edin.), F.R.C.P.E., F.R.S.E., Professor of Obstetrics and Gynaecology in the Rush Medical College. Pp. 712. Text Illustrations 372, and coloured Plates 10. Philadelphia and London: W. B. Saunders & Co., 1907.

THE opening chapter of this work deals very fully with the anatomy of the female pelvic organs. The descriptions given are very full and clear, accompanied by useful notes on development, and are profusely illustrated. The functions of the ovary are considered in a special paragraph, which includes the more important recent researches in this interesting subject. This is followed by a chapter on puberty and menstruation, including a full account of the histological changes in the uterine mucosa at the period. In the section devoted to physical examination there is a very clear and well-written description of the examination of the female bladder. The chapter on surgical technique is especially interesting and very complete. The author is in favour of the use of rubber gloves in all cases, these should be specially made from a model of the Surgeon's hands and should be of sufficient strength not to rupture easily, and at the same time not thick enough to interfere with the sense of touch. The author lays stress on the careful sterilization of the hands before putting on gloves, and for this purpose he advocates scrubbing the hands with soap and frequent changes of hot water, drying with a sterile towel and rubbing for a minute with alcohol to remove any remaining moisture, then rubbing in unpurified clove oil for 4 to 5 minutes and afterwards washing this off with alcohol, finally rubbing with sterilized talc powder and putting on dry rubber gloves which have been boiled for 15 minutes. In accordance with all modern surgical teaching he advocates the avoidance of drainage whenever possible after abdominal sections, and the great importance of leaving no denuded peritoneal surfaces. We were somewhat surprised to find no mention of Fowler's position in the section devoted to after-treatment of abdominal sections. In the chapter dealing with diseases of the uterine appendages the value of conservative methods is very rightly and wisely insisted on. In the

treatment of uterine fibroids the author favours total hysterectomy as against supravaginal amputation, as, from the standpoint of malignancy in association with fibroids, being the more scientific procedure.

The work as a whole is quite one of the best expositions of modern Gynaecology with which we are acquainted, and should be in the library of all those who are interested in the subject. It is clearly written, and includes all the more important recent work in this branch of surgery, the treatment recommended being in accordance with the best teaching of the day.

It is well printed and beautifully illustrated, and fully maintains the high standard of excellence we have learnt to expect in all books issued by this well-known Publishing House.

Atlas and Text-Book of Human Anatomy.—By SOBOTTA AND McMURRICH. Published by W. B. Saunders & Co.

Two volumes of the above work have issued from the publishers' hands, Volume 1 dealing with the bones, ligaments, joints and muscles, while Volume 2 touches on the viscera, including the heart. A subject such as anatomy can be learned and learned only by being able to retain mental pictures of the parts in question, and volumes of description will do less to furnish a correct picture than will a single dissection or the inspection of accurate illustrations. Many good atlases have been brought out, but then high price, and the fact that many of their illustrations are not true to nature militate against their general usefulness, the great point about these volumes is that they are handy, practical—not too comprehensive, and they are provided with magnificent illustrations, so that correct mental pictures of parts are impressed on one. One of the faults of the atlas is that the text is not quite full enough for any one wishing to work up his anatomy for the higher examinations.

Multicolour lithography has been largely employed, and is a new method in the illustrating of anatomical atlases, while photography has also been largely indented on to insure the accuracy of the illustrations, with the result that the atlases are the best illustrated ones on the market, and they should be of infinite value to not only the student in the dissecting room, but also to the busy practitioner who wishes to revive his anatomical lore which may have become rusty with passing years. A special word of praise is due to the text and illustrations on that "*bête noire*" of students—joints and ligaments—and anyone studying this part from Volume 1 of the atlas should have no difficulty in retaining clear and distinct pictures of the various joints and their ligaments. The latter half of Volume 1 is devoted to myology, and it is no exaggeration to say that anyone who for any reason is unable to go in for actual dissections, should be able to study this branch of the subject very

fairly well from the illustrations with the help of the text. The nomenclature employed in places is somewhat different to what one is accustomed to in our English anatomical works, but where unfamiliar terms have been used, the more familiar English term has been added in parentheses.

In his preface to the second volume, the author states "in the production of this volume even more than in that of the first, the publishers have spared neither effort nor expense to insure the greatest excellence of the illustrations," and the results, certainly, are so uniformly excellent that it would be invidious to point to certain plates, the text too is short, concise, and to the point.

The descriptive writing and illustrations on the heart with which this volume closes merit nothing but praise.

The two volumes which have now appeared whets one's appetite for good things to follow, and if succeeding ones maintain the high standard set, then the authors are indeed to be congratulated on having produced an atlas and text-book of human anatomy which, as far as illustrations are concerned, is the best we have seen.

"Psychology applied to Medicine" Introductory studies.—By DAVID W. WELLS, M.D., Lecturer on Mental Physiology and Assistant in Ophthalmology, Boston University Medical School. 12mo Bound in cloth. Price, 6s net (F. A. Davis Company, Philadelphia).

In spite of its fragmentary nature, its errors, or we may call them "Americanisms" of style, composition and spelling, this introductory study of the application of Psychotherapeutics to the practice of medicine deserves to be read by all earnest medical men, whatever views they may hold on Hypnotism, Occultism, Christian Science and the like.

In the first two chapters the elementary principles of Psychology are explained and exemplified, the contrasts between man and the remainder of the animal world being clearly brought out. The next two chapters treat of the Psychology of Sensation, theoretical and experimental. The author, being himself an oculist, devotes great attention to the problems of sight. He upholds, for example the view of LeCompte regarding the upright retinal image. He says—"Man is ignorant of the retinal image." "Each mathematical point of an object is referred back to its proper place and we see, not the retinal image, but the object itself in space."

Hypnotism in its historical, practical and theoretical aspects is then fully discussed. Reference is naturally made to the surgical operations conducted at Huguili under hypnotic influences by James Esdaile, of the Indian Medical Service, in 1845. These operations coming as they did in the pre-chloroform days ought, as Dr. Bastian remarks in another work,

"never to be forgotten." The abuse of Hypnosis by quacks and others is rightly condemned, but Dr. Wells is not only an intense sympathizer with the hypnotic and all its kindred cults, but he practises what he preaches.

The last three chapters on psycho-therapeutics are most interesting as defining the practical limits of the subject for the medical man. Great stress is naturally laid on the influences of suggestion, the sheet anchor of all psychic practice. Every practitioner must be well aware of these influences and many, if not all, subconsciously practise them. The object of the book is that the practice of these suggestive influences should become more general and should support, not supplant, the other aims and aims of the physician.

The book is well got up and clearly printed on fine paper. A cheaper edition would probably be welcomed. The price of the volume before us is distinctly too high.

The Technic of operations upon the Intestine and Stomach. By ALFRED H. GOULD, M.D., of Boston. Pp 302, with 190 illustrations, mostly original, eleven coloured. W. B. Saunders & Company, Philadelphia and London, 1906.

IN this book, which is the result of three years' research work and experiments on animals and the cadaver, are collected certain of the standard operations upon the stomach and intestines. It consists of five chapters which deal with the repair of intestinal wounds, suture, materials, needles, tying of knots, use of clamps, etc., anatomy of the intestines, operation upon the intestines, and operations upon the stomach. As stated in the preface, no pretence is made of giving all the methods in vogue, and many well-known operations have been omitted, to give more room for illustrating the methods which have been chosen. The author has thoroughly accomplished the task he set before him, and we can confidently recommend the work to the notice of young surgeons beginning the study of intestinal surgery. The instructions are clearly and concisely given, and can be readily grasped by the reader. Even were it otherwise, the very large number of really beautiful drawings with which the book is profusely illustrated would clear up any uncertainty. With the aid of these illustrations the student would be able to repeat for himself on the cadaver the operations described in the text.

Folia Therapeutica, a quarterly journal of modern Therapeutics and Pharmacology. By A. BAGINSKY, of Berlin, and Dr. J. SNOWMAN, London. John Bale Sons and Danielson. Price 1s.

WE have received the first two copies of *Folia Therapeutica*, a new Journal to appear every quarter under the editorship of Dr. A. Baginsky, Professor of Medicine in Berlin University, and of Dr. J. Snowman, London. It is written in

English and is intended to bring to the notice of the profession all new matters relating to therapeutics, with a critical appraisement of the many novelties put before the profession. The second number has an article on asthma by Sir J. Sawyer, another on arteriosclerosis by Senator of Berlin, one by Edwards of Manchester on gonorrhoea in the male and many others. To all interested in new drugs, the new Journal is to be commended. It is a practical journal and the subject of treatment will always be a prominent feature.

Correspondence

PRATT'S OPERATION FOR HYDROCELE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Pratt's operation for hydrocele I have been in the habit of performing for some years and am surprised to find, on enquiry, that it is not universally known and performed.

Warren and Gould's International text book of Surgery describes it under the name of the "so-called Doyen operation." Treves, Rose, Carless, and Walsham do not mention it. Dr. Fink's description in the May number of the *I M G*, is perhaps unnecessarily elaborate. Stitching of the tunica vaginalis is not needed. An incision one or two inches long, down to the fibrous layer is made. The sac is then separated from the surroundings by a few strokes of the finger enough to make room for the testicle when the sac is everted. An incision is then made in the tunica vaginalis just large enough to allow the testicle to be squeezed through. The fluid is evacuated and the testicle is gently squeezed through the hole. Thus the tunica vaginalis is turned inside out. All that remains to be done is the suturing of the skin with a continuous horse hair suture. The operation takes only a few minutes to perform, the wound heals by first intention and the patient is up and about in seven or eight days. It is a vast improvement on the tedious method of dissecting out the sac, or of draining it.

Yours, etc.,

W G PRIDMORE,

MAJOR, I M S,

Civil Surgeon, Mandalay

PRATT'S OPERATION FOR HYDROCELE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

DEAR SIR,—Dr L J Fink, M B, C M, in his communication on the radical cure of hydrocele by incision and eversion of the sac, published in your issue for May, states that he has been unable to find that the operation has been performed by any Surgeon in this Province.

I beg to say that I have performed the operation in all cases of hydrocele coming under my care since reading its description by Lt Colonel Pratt, I M S, some years ago.

Hydrocele being rare in the districts I held medical charge of in Upper Burma, I had opportunities of doing but a few, until I went to Akyab as Civil Surgeon in 1901. The large annual influx there of Chittagonian Bengalis during "the paddy and shipping season" gave me opportunities of operating on several hydroceles and amongst them were two of extraordinary size, one being complicated with inguinal hernia. The cases I operated on in the Civil Hospital were included amongst the operations in my quarterly return.

In the Ruby Mines District during 1903 and 1904 I did a few cases, and in my present station I have performed the operation twice—on 22nd January 1906 and 29th March of this year—on both occasions in the Civil Hospital.

Yours faithfully,

A H NOLAN,

CAPT, I S M D,

Civil Surgeon, Prome, Burma

RADICAL CURE OF HYDROCELE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—After reading Dr Lawrence J Fink's paper on the above subject in the *Indian Medical Gazette* of May 1907, and your footnote inviting correspondence, I wish to say that finding one of the occasional causes of delayed recovery in this operation is from septic infection of the wound due to the patient's pulling off, loosening, or soiling the dressings, and that the scrotum is difficult to effectively bandage, I have combined Pratt's operation with an inguinal hernia incision.

This is both easy and rapid, and keeps the skin incision well out of the way of being soiled.

The incision is made above Poupart's ligament from the external abdominal ring curving upwards towards the anterior superior spine for 1½ or 2 inches. The skin, fat and superficial fascia are cut through and the cord exposed.

The finger is then inserted into the scrotum and the sac freed from its connections. When freed, the sac is tapped with a trocar and cannula in the usual way if necessary [that is, if the hydrocele is large].

The sac, testicle and cord can then be drawn out of the scrotum through the incision.

This having been done, the sac is treated as in Pratt's operation, and returned into the scrotum, and the skin incision sewn up.

The advantages of this method are—

1 The skin incision is kept well away from all source of infection.

2 It is far more comfortable to the patient (as the bandage in the inguinal region is pleasanter than one over the scrotum).

3 It can be done rapidly—10 minutes or less being usually sufficient.

4 There is no hemorrhage as the only vessel that may get cut is a small branch from the superficial external pudic which crosses the cord.

5 In cases complicated by hernia it would be preferable to have the incision in the usual place for inguinal hernia instead of in the scrotum.

Yours, etc.,

CORRIE HUDSON,

M R C S, L R C I

SENDERABAD,

RADICAL CURE OF HYDROCELE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The following table represents the cases operated on during the years 1906 and 1907, and shows the number of days in hospital after the operation.

Lieutenant Colonel Castor, I M S	1	32 days
	2	21 days
	3	26 days
	4	25 days
	5	24 days
	6	25 days
Captain Dee, I M S	7	14 days
	8	28 days, testicle inflamed—result of iodine and carbolic acid injectors
	9	17 days
	10	30 days, abscess formed
	11	24 days, kept in to see if after swelling would reduce quickly
	12	16 days
	13	13 days
	14	9 days
	15	7 days
	16	7 days

Above includes day of operation and day of discharge.

As regards Lieutenant Colonel Castor's cases, I have to judge from Medical History sheets, and one case that was in hospital when I took over.

His operation seems to have been putrid removal of sac, closing remainder of sac with continuous suture, and then closing skin wound with or without drainage. The after swelling in the majority of cases seems to have been very considerable, and probably accounted for the time patients stayed in hospital.

Many of my own cases had considerable after swelling, and though nearly all could have been discharged in 14 days, they were kept in to try and reduce this swelling.

As regards the operation there are two things to be kept in mind.

(a) to reduce hæmorrhage to a minimum, (b) to prevent the after swelling, which, if large, takes months before it is absorbed.

All the cases I have met with in this series had the following characteristics:

- 1 Great thickening of the sac
- 2 Firm adherence of sac to testicle and epididymis behind
- 3 Enlargement of testicle, the surface of which was usually of a dull white colour, corrugated and exactly similar in appearance to lining membrane of sac. Occasionally little per like cysts were present.

As I do not think that the perfect operation has yet been discovered, I seldom do two in a precisely similar way. A rough classification is given below:

- 1 Turning out of hydrocele after dissection of loose areolar tissue round it with finger or forceps handle. Contents then evacuated, sac turned inside out and replaced.

- 2 The above with removal of small portion of sac wall.

- 3 The above with removal of the whole of sac wall except the portion adherent to testicle behind.

- 4 Cutting down on sac by small incision about $1\frac{1}{2}$ inches long, opening up sac at once without separating the surrounding areolar tissue, etc., turning the testicle out and removal of the whole of sac and any areolar tissue in connection with it by means of a large curved scissors.

Operation No. 1, which is practically that described by Dr. Fink, I consider most unsuitable for cases of large thickened and adherent sacs, as the sac which remains in the scrotum is, I presume, never absorbed, and must necessarily be an encumbrance to the patient afterwards. Again, the sac having been dissected out, its removal adds little to the severity of the operation. Nos. 1, 2 and 3 in my opinion fail, in as much as they almost invariably cause a good deal of after swelling. I attribute this to the fact that, the separation of the loose coverings of the sac by the fingers or forceps, opens up many plains of loose areolar tissue broken and torn bits of this tissue are left in the wound which are bound to ooze and cause swelling.

No. 4. In this operation the areolar tissue is not torn, nor are the different plains opened up. Any of it that is removed is cleanly cut. The hæmorrhage, though it may and does cause trouble, is small arterial rather than oozing, and a little more under control than in the other operations. I have found drainage unnecessary, the wound being entirely closed and healing by first intention. The after swelling is negligible. I should consider this a perfect operation, were it not for the time occasionally taken up in stopping all hæmorrhage. The last three cases left hospital without a dressing 9, 7, and 7 days respectively, and returned straight to work. In each case there was very, very slight swelling which did not require treatment. Pain after operation is exceptional. Dry sterile dressings used throughout.

When I state that "I do not think the perfect operation has yet been discovered", I meant this remark to apply to immediate results, not to the final results. Of all the cases I have seen, which include two of Col. Custer's, the results are all that could be desired. No sign of recurrence in any of the cases. The testicle on affected side was, as a rule, very slightly larger than on the unoperated side, but there was no swelling, enlargement or extra weight of the scrotum. I only saw one of the cases in which I turned the sac inside out, and unfortunately in this case I had removed a portion of the sac as well. I am anxious to see a case 12 months after operation in which a big thick sac has been simply inverted.

Yours, etc.,
P DEL,
CAPTAIN, I.M.S.

BISSEK

THE VARIETIES OF HYDROCELE

To the Editor of THE "INDIAN MEDICAL GAZETTE"

SIR,—During the period of my House Surgeonship in the Medical College Hospital a period extending nearly over three years, I had opportunities to study about 250 cases of hydrocele—cases that came into my wards for the operation of radical cure.

It is generally accepted that the etiology of hydrocele is very obscure, and all explanations have been very unsatisfactory. I will not attempt to ascribe any specific cause, but will only mention a few facts which I have noticed in these cases and which have led me to write these lines.

Hydrocele is very common in Bengal, Behar, Orissa and some districts of the United Provinces, districts bordering in Behar. It is extremely rare in the Punjab. In all these places, the common belief prevalent among the lower and ignorant classes is that hydrocele is the effect of certain properties in the drinking water. This belief is also shared by the higher and the educated classes. For myself I know nothing about it except that it is mentioned as above, but at the same time I have known new comers in the affected districts having their drinking water boiled before consumption. I do not think this has been looked into properly, and

careful enquiry in the future may clear up or confirm the prevalent doubt.

I have divided hydrocele into two varieties—(1) small and moderate size ones, that are invariably single and do not increase in size after a certain stage, (2) the large ones, mostly double, which go on increasing in size till they grow huge and stretch on to the skin so much as to get the penis included.

I have a firm conviction that these are two distinct varieties, different in their origin and course. I would like your interested readers to note my observations, and compare them with theirs in order to make this attempt of mine an accepted fact.

In the first, the smaller and stationary variety, the process starts as an accident continues till it reaches a certain size, when it is arrested and a sort of compensation is maintained by which further increase is stopped. The larger number give history of an inflamed cord, may or may not be the result of an injury which passes off in a day or two, without much constitutional disturbance, leaving a sense of fullness and heaviness of the cord. The hydrocele starts later and the process is quiet and without any pain or tenderness. In fact the accumulation occurs without any perception and is only noticed first when the difference in the two sides is marked. There is no attendant or recurrent inflammation and after reaching a certain size the accumulation stops. Then very slight or no discomfort, and the patient carries this hydrocele almost all his life unless he has it attended to. The fluid measures from a few drams to 4 or 6 oz and the skin of the scrotum is never affected. These are the cases in which the old "tapping and injection" gave favourable results.

On opening the sac the fluid is found to be perfectly clear, of a very pale straw colour, and with no cholesterol crystals. The tunica is perfectly healthy, pearl white in colour, smooth, with no adhesions and no sign of any inflammation. The veins of the cord are found to be enlarged in these cases and the majority of these hydroceles are on the left side, probably due to the different arrangement in the veins of that side. The testicle is always normal.

The other variety has quite a different origin. This is the genuine hydrocele. It begins generally on one side with an acute epididymitis or an orchitis which is attended with more or less an amount of constitutional disturbance. Usually the inflammation has no apparent cause, and the patients describe it as having "started itself." This inflammatory stage lasts for three or four days and then subsides, leaving the testicle enlarged. After a period of quiescence there is another similar attack generally on the side opposite to the first and runs a similar course. This process may be repeated several times before accumulation of fluid commences, and after that the accumulation is rapid. The testicles remain tender, the inflammation never subsiding altogether at any time. There is always a quiet process going on and the result is that size increases steadily, stretching the skin till obliteration of the penis begins. Sometimes this size is enormous, and I have seen a case in which it reached down to the man's knees. The two sides are not always equal, the one generally being larger than the other.

Later on the size of the sac interferes with the circulation in the skin and the subcutaneous tissues, and the scrotum gets thickened and rugose. This thickened scrotum should not be mistaken for true elephantiasis which it may resemble to a great extent. On incision the skin is found to be adenomatous and a certain amount of subcutaneous blubbery material, so characteristic of filarial elephantiasis, is met with.

On opening the sac, the fluid is found to be clear, but several shades darker than that of the first variety, with abundant crystals of cholesterol floating in it. The sac wall is very much thickened and in some cases almost cartilaginous in consistency and in a small number of cases even calcareous. In some a deposit of reddish yellow lymph is found, while in a smaller number of cases the deposit is thick reddish brown. This is the result of repeated attacks of acute inflammation. In a certain number of cases there are found adhesions especially near the globus major and minor. This is common in cases where they have been previously tapped several times.

The sac shows signs of inflammation almost all over the visceral layer and part of the parietal layer, the greatest amount of inflammation being in the fossa between the epididymis and the body of the testicle. This fossa is the starting point of inflammation and remains inflamed always, thus explaining the amount of tenderness constantly present in this variety of hydrocele. The testes may be atrophied or hypertrophied (in recent cases) or may be normal in size which is the most common. The cords are not affected in their constituents, but the cellular tissues in them are found to be edematous with an unusual amount of fat.

This variety always begins after puberty is reached, and the initial inflammatory stages usual come on with certain phases of the moon, as the new moon, full moon, and the

11th day of the moon * This last fact is well known to Indian practitioners and to the Anglo Indian physicians who are conversant with Indian life. But I would point out that the relation I have only known to exist in Bengal, I cannot speak of other provinces. In the first variety no such relation can be traced.

I have thus tried to describe my observations and have attempted to divide hydrocele into the above two varieties. There must be more observation by others bearing out the same facts before the division is recognized. The facts are not new and they are not uncommon. My attempt has been to isolate them into groups and I believe in so doing I have arrived to recognize two distinct varieties.

GENERAL HOSPITAL, } Yours, etc,
HOWRAH, } L M BANNERJEE,
June 1907 } Asst Surgeon

DISINFECTANTS AGAINST FLEAS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I note in your issue of January 1907 an experimental paper by Dr W C Hossack, on the potency of various disinfectants against rat fleas. Having done considerable work on the germicidal values of all the disinfectants reviewed, I am naturally interested in the findings of this paper, although the distinction of rat fleas and pathogenic bacteria are two distinct types of work. A point of special interest to me is the recommendation of two very different strengths of solutions of Phenyle and Jeyes' Fluid, viz, 1 in 500 for the former, and 1 in 150 for the latter. Previous acquaintance with these preparations demonstrated to me the fact that for purposes of disinfection they may be considered as one and the same compound consisting in each case of roughly 18–20% Cresylic Acid, and practically identical proportions of a remainder of the same neutral tar bodies.

On repeating Dr Hossack's experiments with rat fleas I find the following solutions completely kill the insects within five minutes, and for this work I should not rely on the application of any disinfectant for a less period—

Cyllin	1 in 400
Phenyle	1 in 250
Jeyes' Fluid	1 in 250

Yours, etc,
KING'S COLLEGE, } DAVID SOMMERVILLE, M D
LONDON }

A MACHINE FOR LOADING VACCINE TUBES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In the very interesting paper on "The Culture and Preservation of Vaccine Lymph," published in your May number, the author Dr Neild Cook states that the machine devised by me for loading capillary tubes was found unsatisfactory. I can assure him that this must have been due, either to faulty construction of the machine or inexperience in its use, for if properly made and worked its efficiency is beyond question. During the past year 328,000 capillary tubes have been loaded with it in this depot, and yesterday I noted the time required to fill a batch of over 2,000 tubes. This was just 7 minutes or at the rate of 17,000 tubes in an hour. This figure rather dwarfs the rate of 400 per hour achieved in Calcutta. It is probable the machine referred to by Dr Neild Cook was faulty, in fact, even in England I have experienced great difficulty in getting a satisfactory machine made from a mere description. Messrs Baird and Tatlock have now, however, succeeded in making a good working model and I hope the machine will be on sale by that firm in the course of next few months.

I remain,
Yours faithfully,
J ENTRICAN,
MAJOR, I M S

MEIKTILA, BURMA, }
May 30th, 1907 }

THE MISUSE OF THE TERM "RHEUMATISM"

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In your paper of March 1907, is an article by Dr R. P Banerjee, of Udaipur, Rajputana, on Rheumatism, in which

he attempts to classify 976 cases of different forms of Rheumatism. He refers to a paper he published in the *I M G* of September 1896, on the same subject, which I replied to in the December 1896 number of the same paper, suggesting that Rheumatism did not occur in the tropics.

In this last paper of his he gives no less than 17 different forms of Rheumatism—

1 Syphilitic, 2 Tubercular, 3 Malarial, 4 Metastatic, 5 Dyspeptic, 6 Gonorrhoeal, 7 Seasonal, 8 Puerperal, 9 Septic, 10 Varicose, 11 Traumatic, 12 Suppurative, 13 Diptheritic, 14 Albumenuric, 15 Cardiac, 16 Doubtful, 17 Sham or Malingering.

Rheumatism must be looked on as a specific disease, depending in all probability on a definite organism, probably Payne and Poynton's, but anyhow no pains, wherever situated, which are not caused by the organism of acute Rheumatism should be called Rheumatism, and to do so is either a misuse of the word or an error of diagnosis.

After carefully reading Dr Banerjee's article I have come to the conclusion that out of his 976 cases of different forms of Rheumatism not a single one is in any sense fit to be so called, and that it is a very bad abuse of the word to describe any of the diseases mentioned by that name.

I should not reiterate the view I expressed in December 1896, and repeated in the *Journal of Tropical Medicine* of November 1899, a view that Manson in his latest work practically accepts, were it not that the effect of this article is likely to be extremely bad. Men of the Hospital Assistant class will read it, diagnose pains as Rheumatism, and treat with salicylates, and thus the evil effects of the misuse of a word may be very wide spread. I hope that you will insert this letter in your Gazette as a protest against what is either an error of diagnosis or very loose diction.

Yours, etc,
J T CLARKE,
L K C P, LOND.,
M R C S, ENG.,
D P H, CAMB.

PFRAB, }
May 1907 }

THE INDIAN MEDICAL SERVICE

By D G CRAWFORD, M B,
LIEUT. COLONEL, I M S,
Civil Surgeon, Hughli

(Continued from page 276)

11 *Political Services of Indian Medical Officers*—From the earliest times, the E I Co has owed much to its medical officers, through the favour they acquired among native potentates by their professional skill. The legend of Gabriel Boughton is well known. It runs as follows: The Princess Jahanara, daughter of Shah Jahan, was severely burned in the Emperor's camp in the Dekkan, a message was despatched in hot haste to Surat to ask for the services of an English surgeon, Gabriel Boughton, surgeon of the Hopewell India-man, was sent, and succeeded in curing the lady. Shah Jahan told Boughton to name his own reward, whereupon Boughton asked that the E I Co might be granted permission, previously refused, to trade with Bengal, this permission was at once granted, and the E I Co sent out ships to the Hughli, while Boughton went to Bengal as Surgeon to the Emperor's son, Shah Shuja, Viceroy of that province. He was fortunate enough to be called in to treat, and to cure, one of the ladies of Shah Shuja's harem. Armed with the favour of both the Emperor of Hindustan and the Viceroy of Bengal, the E I Co began to trade with Bengal, the richest province of India, under the most favourable auspices. This legend was current within a quarter of a century of Boughton's death, and is repeated, with various embellishments, by one historian after another, Orme, Bruce, Stewart, etc. Dow, however, in his *History of India*, a version of the annals of Farishta, a native writer, does not mention Boughton's name, and gives the true facts of the story with more accuracy.

Unfortunately, there appears to be no truth whatever in the earlier part of the Boughton legend. The accident to the Princess Jahanara occurred at Agra in

* This lunar relationship, which is akin to the supposed influence of the moon on the weather, is also said to be true as regards elephantiasis in Bengal.—ED, *I M G*

1643-44, more than a year before Boughton was sent to the Court of Shah Jahan. Tradition appears to have transferred the place of the accident from Agra, the capital, to a camp in the Dekkan, owing to the obvious impossibility of a surgeon from Surat reaching Agra in time to be of any use. Boughton was sent from Surat to Agra in 1645, acquired great influence at court through his professional services and accompanied the Emperor's son, Shah Shuja, to Bengal, when he went there as Viceroy. It appears probable that Boughton did get a grant, in favour of the E I Co's trade with Bengal, not from Shah Jahan, but from Shah Shuja, but even this is by no means certain. The original document, which was given to the Company's Agent in Bengal in 1651-52, was lost on an overland journey from Bengal to Madras. We last hear of Boughton as certainly alive, and in favour of Shah Shuja's viceregal court, in 1650. In 1657, he was dead, and his widow had married William Pitts, a servant of the Company stationed at Hughli.

Whatever truth there may be in the legend of Gabriel Boughton, there is no doubt as to the reality of the services of William Hamilton,* probably the most famous name among all the Medical Officers who have served in India, and certainly of all of them the greatest benefactor to his country. Hamilton accompanied the embassy, under John Surman, sent by the Bengal Government in 1714 to Delhi, to the court of Farakh Siyar, then Emperor of Hindustan. The embassy, which reached Delhi in July 1715, had much difficulty in gaining audience of the Emperor, who was then engaged in preparations for his marriage to the daughter of the Raja Ajit Singh of Jodhpur, which was delayed by some ailment. Hamilton was called in to treat the Emperor, and was successful in curing him. Being told to name his own reward, he asked that the requests of the embassy might be granted. This was done by Farakh Siyar. The chief of these requests were, freedom from duties of the Company's Bengal trade, the right to coin money in the Emperor's name, and permission to purchase the *Zamindari*, or landholding right, of 38 villages round Calcutta. Other rich rewards, in money and kind, were given to Hamilton by the Emperor. The embassy remained at Delhi for a year and a half longer.

Farakh Siyar showed great reluctance to part with Hamilton, who in the end only got leave to depart on promising to return after a visit to Europe. They left Delhi in June 1717, and reached Tribeni 35 miles from Calcutta, where they were received with great pomp by the Bengal Government, about 20th November 1717. Hamilton returned only to die. He breathed his last in Calcutta on 4th December 1717. His tombstone may still be seen in Job Churnock's mausoleum, in the North West corner of the grounds of St John's Church, Calcutta.

The next Medical Officer who figures prominently in history is John Zephaniah Holwell, who came out to India as Surgeon to an Indian in 1732. After serving in various capacities in Bengal he was placed on the regular list of Medical Officers in 1742. Going to England in 1748, he returned in 1752 as twelfth in Council, and *Zamindar* of Calcutta, an office roughly corresponding to those now held by the Collector of Calcutta and Commissioner of Police. He retained this post up to the capture of Calcutta in 1756. After Drake, the Governor, had deserted the garrison under his command—an episode surely without parallel in English history—by universal consent the conduct of the defence was handed over to Holwell, though he was not the senior Councillor who had remained at his post. After the capture of the Fort, Holwell with the

other prisoners was confined in the Black Hole, and was one of the twenty-three survivors. He was subsequently sent in chains to Murshidabad, but released after a short time, and made his way to Fulta, where the other survivors of the English settlements in Bengal were staying. He went home in the *Syren*, a sloop of 70 tons, early in 1757, writing his narrative on the way. While at home he was nominated to succeed Clive as Governor of Bengal, but waived his claim in favour of Mr. Massingham, and was appointed second in Council. Before he started, a new Board of Directors had been elected, who cancelled this appointment, and sent him out as seventh in Council. By the time he landed he had risen to fourth, by the departure of seniors, in 1759 he was second, and succeeded Clive as Governor on 28th January 1760, but resigned the same year, on 27th July 1760, and returned to England for good. He lived in retirement for 38 years, dying at Pinner on 5th November 1798. He was the first medical man serving in India to be elected a Fellow of the Royal Society, his election dating from 29th January 1767.

Another officer of the I M S, who attained prominence by his political services was Sir John Macneill, G.C.B., who entered the Bombay service as Assistant Surgeon in 1816, and served from 1824 to 1835 in the E I Co's Legation in Persia, first as Medical Officer, then as Political Assistant, and Secretary to the Embassy to Teheran. In 1836, when the Persian Legation was transferred from the E I Co to the Foreign Office, Macneill retired from the I M S, and was appointed Minister Plenipotentiary to Persia. He was created a G.C.B. in 1839, and left Persia in 1842. In 1845 he was appointed Chairman of the Board of Supervision of the working of the Scottish Poor Law Act of 1845, an office which he retained up to 1878. In 1855 he and Colonel Sir Alexander Tulloch went to the Crimea as Special Commissioners, to enquire into the working of the Commissariat during the War, and on his return in 1857 he was created a Privy Councillor. He died on 17th May 1883, after a career perhaps more successful than that of any other officer of the I M S, being the only officer of the service who has attained to the dignity of Ambassador and G.C.B., while only one other, Joseph Hume, has been a member of the Privy Council.

At the same time that Macneill was attaining fame in Persia, another officer of the Bombay Medical Service, Percival Lord, was also serving his country politically in a neighbouring part of the world. Lord accompanied Captain, afterwards Sir Alexander, Burnes to Kabul in 1836, and was one of the officers appointed as Political Assistants to Sir William Macnaghten, on the ill-fated expedition to Afghanistan in 1839-42. While serving as Political Agent in Afghan Turkistan he was killed in the battle of Parwan on 2nd November 1840.

Henry Walter Bellew, after serving in the Crimea, entered the Bengal Medical Service on 14th November 1855, and speedily made a name as an authority on the manners, customs, and language of the Afghans, and as a traveller. During the mutiny he served with the Lumsdens at Kandahar. In 1871 he accompanied Sir R. Pollock's Mission to Seistan, and in 1873 went with Sir Douglas Forsyth to Kashgar and Yarkand. During the Afghan War he served as Chief Political Officer at Kabul in 1878-79. The last appointment which he held in India was that of Sanitary Commissioner of the Punjab. He retired on 14th November 1886, and died on 26th July 1892.

12 War Services —

The Indian Medical Service has, of course, taken part in every war in which troops from the Indian Army have served, including all Indian and Asiatic wars, also Baird's expedition to Egypt in 1601, the Egyptian war of 1882, the Sudanese expeditions of 1885 and 1896, and the South African War of 1899-1902. But members of the I M S have served in many wars in which the Indian army was not officially represented, some before

* The "Dictionary of National Biography" does not mention either Boughton or Hamilton, though it commorates over sixty Indian Medical Officers, the services of all of whom, put together to the Company and to their country, do not perhaps equal those of William Hamilton.

entering the service, some on furlough or deputation, some after retirement. Four served in the Peninsula, Hugh Mackenzie, as a subaltern in the 57th Foot, G N Cheek, and W Twining, all these three being Bengal officers, afterwards, and William Fasken, of Madras Cheek and Twining were also at Waterloo. Over twenty served in the Crimea, one in the Baltic, others in the Ashanti and Zulu wars, two at least in the Franco-German war, and one (retired) in the American Civil war and one in New Zealand. The only British war of importance, during the nineteenth century, in which the I M S has not been represented, is the final advance on Omdurman.

For the last 150 years, in almost every war in which the Indian Army has taken part, one or more officers of the I M S have sealed their service with their blood. No less than thirty fell in the Mutiny. The first whose name is recorded as losing his life on service is William Inglis, who perished in the siege of Calcutta in 1756, the last was in April 1903, when Lieutenant F W Sime, the first of the new I M S to fall in action, was killed in Somaliland.

Often in the history of the Indian Army officers of the I M S have had to go beyond their usual non-combatant duties to take their share of more active service. William Fullerton distinguished himself in the war in Bihar in 1760. Broome ("History of the Bengal Army," pp 281-283) thus describes the action on 9th February 1760 at Miranpur, near Patna, between the army of the Emperor Shah Alam, and the troops of Mir Kasim, Nawab of Bengal, commanded by Ram Narain, Governor of Patna who was assisted by a few English Troops. Only five officers were present, Captain Lochina commanding, Lieutenant Buck of the Artillery, Ensign Windebeck, Volunteer Bawell and Dr Fullerton. The other four officers being all killed "the only European officer now surviving was Dr W Fullerton, the Surgeon of the Agency," who assumed the command. Finding that the day was completely lost, this little party commenced their retreat to the city, surrounded by the enemy, but by the coolness and steadiness of their conduct keeping the latter at a respectful distance. One of the two gun carriages having broken down, they were compelled to spike the piece and leave it on the field, but the tumbril of the other having upset Dr Fullerton halted the party, deliberately righted it, and then resumed his march, by their cool and daring behaviour this remnant of the party succeeded in making good their retreat to Patna."

A siege of Patna speedily followed, in which Fullerton, as related by Broome, again distinguished himself, in repulsing a storming party. He, like the other officers and civilians then at Patna, was taken prisoner when the English factory at Patna was captured by Mir Kasim's troops in 1763, and was the only one whose life was spared, when the other prisoners were all murdered in the Patna massacre. He owed his life to the fact that he had professionally treated the Nawab Mir Kasim, before the war between him and the English.

In the first Afghan war, when Shah Shuja's Gurkha regiment was almost destroyed at Charekui in Afghan Turkestan, on the 13th to 15th November 1841, "Mr Grant, a medical officer,—not the first medical officer who has played the part of the true soldier in battle, and justified the claims of his profession to the soldier's honours and rewards,—having spiked all the guns with his own hands, led out the main body, while Ensign Rose brought up the rear." [Kaye, "History of the Afghan War," Vol II, pp 233, 234] Rose and most of the men were killed at Kardarra. Grant got within three miles of the Kabul cantonments before he fell. One wounded officer, one sepoy, and a clerk were all who reached the cantonment. The Mr Grant here referred to was Assistant Surgeon G M Grant, of the Bombay Service.

Service Notes

THE Secretary of State having sanctioned the introduction of temporary and provisional arrangements in the Administrative Services, in consequence of the abolition of the Commands, the following temporary changes in those Services will be made with effect from 1st June 1907.

The permanent arrangements for the conduct of the duties in these Services and for the remuneration of officers including those immediately affected by the abolition of the Commands will be notified hereafter when the details have received the approval of the Secretary of State.

III—Medical

(a) The appointments of Principal Medical Officer, Personal Assistant to the Principal Medical Officer, Sanitary Officer and Staff Officer, Army Reserve Corps in each Command and of Sanitary Officer and Staff Officer, Army Reserve Corps, in the Secunderabad Division and Burma, will be abolished.

(b) The Principal Medical Officers of three of the Divisions will be Surgeon Generals, their pay being fixed at Rs 2,200 per mensem consolidated.

(c) Two temporary administrative posts will be created each to be held by a Colonel viz—One for the Allahabad and Ferozabad Brigades, and the second for the Secunderabad Brigades (Infantry and Cavalry).

(d) A Colonel will be appointed Deputy to the Principal Medical Officer, His Majesty's Forces in India, his pay being fixed at Rs 1,500 a month consolidated.

(e) A Sanitary Officer will be appointed in each of the nine divisions and Burma, his staff pay being fixed at Rs 300 per mensem.

(f) A Staff Officer for Medical Mobilization Stores will be appointed in each of the nine divisions (excluding Burma), his staff pay being fixed at Rs 300 per mensem.

(g) Owing to the above changes, the establishments of the Medical Services in India will be reduced by the number of officers corresponding to the number of Civil appointments abolished.

(h) The existing Lady Superintendents will, under the orders of the Principal Medical Officer, His Majesty's Forces in India, be distributed to the charge of four circles as follows—

First Circle—Comprising the Peshawar Rawal Pindi and Lahore Divisions.

Second Circle—Comprising the Meerut and Lucknow Divisions.

Third Circle—Comprising the Quetta, Mhow and Poona Divisions.

Fourth Circle—Comprising the Secunderabad Division and Burma.

(i) Orders regarding the disposal of the clerks and establishments of Medical Division Offices at Command Head Quarters will be issued by the Principal Medical Officer, His Majesty's Forces in India.

THE Director General, I M S, has published the following reply received by him on the question of study leave—

"I am directed to acknowledge the receipt of your letter No G A 4847, dated the 10th January 1907, in which you enquire whether—

(1) An officer of the Indian Medical Service can proceed on combined privilege and study leave for a total period of less than six months, Article 233 (ii), Civil Service Regulations, and

(ii) Whether he can take study leave within eighteen months of his last return from privilege leave of over six weeks [Article 308 (b) (iii)].

2 In reply, I am directed to say that under the rules as they stand study leave is leave of a special kind for which no provision is made in the Civil Service Regulations and until further experience has been gained of the working of the rules, the Government of India think it preferable to leave matters in their present position. Accordingly the answer to the two questions is in the affirmative and the cases which you refer may be dealt with accordingly.

Copy of correspondence forwarded to the Home and Military Supply Departments and to all Accountants General and Comptrollers.

Copy of the above forwarded to the Director General Indian Medical Service, for information, in continuation of Department of Military Supply No 1525 G, dated 6th March 1907.

THE following letter is published for information by the Inspector General of Civil Hospital, Bengals —

No 387, dated Simla, the 30th April 1907

From—J C Fergusson, Esq, Under Secy to the Govt of India, Home Dept,

To—The Secretary to the Government of Bengal, Municipal (Medical) Dept

In continuation of the Home Department letter No 2108, dated the 15th November 1900, I am directed to state, for the information of the Lieutenant Governor, that, with the approval of the Secretary of State for India, the Government of India have decided that a Lieutenant Colonel of the Indian Medical Service in civil employ, who has been selected for promotion to the administrative grade, shall continue to receive the full emoluments of his civil appointment during the period occupied in proceeding to, and returning from, the station at which he receives his two months' special training in military medical duties in the office of a Principal Medical Officer, as well as during the period of that training

This is in amplification of a previous order, Home Department No 2108, dated 15th November 1900. See *Manual of Appointments and Allowances, Bengal*, 3rd edition, 1907 (para 276, page 190)

THE following notifications are from the *Burma Gazette* of 15th June —

Captain R D Saigol, M B, I M S, held charge of the duties of the Superintendent, Lunatic Asylum, Rangoon, for the period from the afternoon of the 9th April 1907 to the forenoon of the 13th April 1907

This department Notification No 89 dated the 11th March 1907, appointing Captain W S Crosthwait, R A M C, to hold collateral charge of the Civil Surgeoncy at Thayet myo, is hereby cancelled

Under the provisions of Article 605 of the Civil Service Regulations, and under the Military Furlough Regulations of 1875, furlough on medical certificate for one year is granted to Lieutenant R H Naile, I S M D, in continuation of the leave granted to him in General Department Notification No 124, dated the 3rd May 1907

THE following postings and transfers are ordered in the Medical Department —

On return from leave Lieutenant Colonel A R P Russell, I M S, is posted to the civil medical charge of the Mandalay District in place of Major W G Pridmore, M B, I M S, transferred

On relief by Lieutenant Colonel Russell, Major W G Pridmore, M B, I M S, is posted to the civil medical charge of the Bassem District in place of Captain P Dee, M B, I M S, transferred

On relief by Major Pridmore, Captain P Dee, M B, I M S, is posted to the civil medical charge of the Shwebo District in place of Major Kantu Prasad, M B, I M S, proceeding on leave

THE services of Lieutenant Colonel W A Lee I M S, Madras, are replaced at the disposal of His Excellency the Commander in Chief in India

THE services of Captain C E Southon, M B, I M S, are placed temporarily at the disposal of the Government of the Punjab for employment on plague duty, with effect from the 13th December 1906

THE services of Captain T W Herley, M B, I M S, are placed permanently at the disposal of the Government of Madras

THE services of Lieutenant R D MacGregor, I M S, are placed temporarily at the disposal of the Government of Burma

CAPTAIN F D BROWNE, I M S, late Superintendent, Cellular and Female Jails, and Civil Surgeon, Port Blair, is granted six months' special leave, with effect from the date on which he is relieved of his duties in the Settlement

LIEUTENANT COLONEL R JAMES, I M S, is due back from combined leave on 14th October 1907

LIEUTENANT COLONEL F J CRAWFORD, I M S, Second Surgeon, General Hospital, Madras, is not due out from leave till 20th February 1908

MAJOR C H L PARK, I M S, has got two years' combined leave and does not return till January 1909

CAPTAIN W J NIBLOCK, I M S, is due back at Madras on 30th September 1907

CAPTAIN C B HARRISON, I M S, has got two years' combined leave from or after 1st March 1907

CAPTAIN A MILLER, on return from leave, was under order to go to Karachi

CAPTAIN F D S JAYIER, I M S, got an extension of furlough up to 7th November 1907

CAPTAIN W C LONG, I M S, acted as Superintendent, Government Maternity Hospital, Madras

CAPTAIN P L O'NEILL, I M S, got eight months' combined leave and is not due back till January 1908

CAPTAIN F C ROGERS, I M S, got 16 months' combined and study leave up to 18th June 1908

SENIOR MILITARY ASSISTANT SURGEON and Honorary Lieutenant J F Goldsmith has been granted 12 months combined leave from Burma

MILITARY ASSISTANT SURGEON R McKIE is posted to the civil medical charge of the Northern Shan States

MAJOR J JACKSON, I M S, and Captain H J R Twigg, I M S, respectively delivered over and received charge of the Yerwada Central Prison on the 1st June 1907, before office hours

LIEUTENANT COLONEL A V ANDERSON, M B, D P H, I M S, has been allowed by His Majesty's Secretary of State for India an extension of furlough on medical certificate for three months

THE services of Lieutenant Colonels C B Willis, M D, I M S, and C Monk, I M S, are placed temporarily at the disposal of the Government of India from the 24th June and the 7th July 1907, respectively

CAPTAIN CLAYTON LANE, M D (London), has passed the Examination in Bengali by the colloquial test

ON Colonel Wilkie's going to Simla to act as Director General, Lieutenant Colonel R Neil Campbell, I M S, Civil Surgeon of Dacca, acts as Inspector General in Eastern Bengal and Assam, and Major A R Anderson, I M S, acts as Civil Surgeon of Dacca

LIEUTENANT COLONEL W A QUAIL, I M S while at home on leave, had "study leave" from 12th October to 12th December 1906

CAPTAIN E F GORDON TUCKER, I M S, and Lieutenant-Colonel R W S Lyons, M D, I M S, respectively delivered over and received charge of the Dhairai Prison on the 3rd June 1907, before office hours

LIEUTENANT COLONEL J P BARRY, M B, I M S, and Lieutenant-Colonel W A Corkery, I M S, respectively delivered over and received medical charge of H M's House of Correction on the 1st June 1907, after office hours

LIEUTENANT COLONEL J R ADIE, I M S, Civil Surgeon, Ferozepore, obtained privilege leave for 1 month and 5 days, combined with study leave for 3 months and 2 days, under Article 260 of the Civil Service Regulations and Rule 6 of the Regulations regarding the grant of study leave to officers of the Indian Medical Service from the 27th of April 1906 to the 2nd of September 1906, both days inclusive

Punjab Government notification No 209, dated the 13th of March 1906, is hereby cancelled

[AUGUST, 1907]

ON relinquishing charge of the duties of Assistant Plague Medical Officer, Ferozepore, Captain T G G Swan, I M S, is appointed to officiate as Civil Surgeon of Shahpur, and assumed charge of his duties on the forenoon of the 30th of May 1907, relieving Military Assistant Surgeon H V W Cox, I M S D

THE services of Lieutenant Colonel W Coates, M D, I M S, Civil Surgeon, Lahore, are replaced at the disposal of the Government of India in the Home Department, under the operation of Article 612 (a) of the Civil Service Regulations, with effect from the 3rd of July 1907. This means that Colonel Coates intends to retire. He completed 30 years' service on 31st March 1907, he was put on the selected list of Lieutenant Colonel in July 1903. It is known that he was anxious for retirement and did not wish promotion. For many years past he has been Civil Surgeon of Lahore and Professor of Midwifery at the Medical School

MAJOR W H E WOODWRIGHT, I M S, F R C S I, has cancelled the 6 weeks' privilege leave granted him from 3rd June 1907

CAPTAIN E J O'MEARA, I M S, got one month's privilege leave from 1st June, or subsequent date

ON 12th June there died in England one of the few survivors of the charge of the Light Brigade, namely, Surgeon Major Lancelot Armstrong, of the Old 13th Light Dragoons. He rode with the regiment in the famous charge. The wonder is that his coolness and bravery in attending the wounded did not get him the Victoria Cross

MAJOR T W FULEERTON, I M S, a Civil Surgeon in the United Provinces has passed the examination for Fellowship of the Royal College of Surgeons, Ireland

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments, *vice* Lieutenant Colonel O H Channer, M B, C M, D P H, I M S, retired — Captain H A F Knapton, I M S, to be Deputy Sanitary Commissioner for the Central Registration District — Captain T S Novis, I M S, to be Civil Surgeon, Sukkur, continuing to act as Civil Surgeon, Nasik, pending further orders

HONORARY CAPTAIN J PRENTIE, I S M D, has been posted to Balaghat District, C P, as Civil Surgeon

ON return from combined leave, Captain W H Kenrick, I M S, returns to Saugor as Civil Surgeon

ON return from furlough, Captain F A Smith, I M S, is posted as Agency Surgeon in Bhopal

LIEUTENANT COLONEL H P DIMMOCK, M D, I M S, is appointed to be Medical Officer Bombay Volunteer Rifles

MAJOR W E A ARMSTRONG, I M S, Madras, is permitted to retire from 12th March 1907. He entered the service in January 1892 and was placed on temporary half pay on 12th March 1905

MILITARY ASSISTANT SURGEON D D STEWART is appointed to the Civil Medical charge of Kyaukpyn District, Burma

CAPTAIN H H G KNAPP, I M S, was appointed to act as Superintendent, Mandalay Jail, *vice* Captain A W Greig, I M S, transferred

CAPTAIN H A WILLIAMS, M B, I M S D S O, Superintendent of the Rangoon Lunatic Asylum, was granted 6 months' combined leave

CAPTAIN A FENTON, I M S, Civil Surgeon, Burma, was on study leave from 29th August 1906 to 31st January 1907

AN excellent article on sleeping sickness appeared in the Journal of the Society of Arts (May 17th, 1907) by Dr H W Macleod, late I M S, now of Upper Wimpole Street, W

MAJOR O R STEVENS, M D (LOND), F R C S (ENG), has succeeded the late Major Mon, as Professor of Anatomy, Calcutta

THE services of Captain T C Rutherford, I M S, and Captain W Tull, M B, I M S, has been placed at the disposal of the Government of Eastern Bengal and Assam

MAJOR H S WOOD, I M S, is appointed Civil Surgeon of Darang, E B and A

MILITARY ASSISTANT SURGEON R A BOERMEL has been granted 3 months' privilege leave

CAPTAIN RUTHERFORD, I M S, was appointed to act as Civil Surgeon of Mymensingh

CAPTAIN W TARR, I M S, was appointed to officiate as Civil Surgeon of Cachar

CAPTAIN D P GOIL, I M S, was appointed Civil Surgeon of Dinajpur

LIEUTENANT COLONEL J W U MACNAMARA, I M S, has been granted combined leave for 13 months and sixteen days

MAJOR A GWYHER, I M S, now Civil Surgeon of Cuttack, Cook, I M S, acted for him

CAPTAIN C G SEYMOUR, I M S, recently temporarily in civil employ, E B and A, has gone back to military employ

THE services of Captain A C MacGilchrist, M B, I M S, are placed (in the *Gazette of India*, June 8th 1907), permanently at the disposal of the Government of Bengal with effect from 1st July 1906

LIEUTENANT J M SKINNER, I M S, Medical Officer 37th Dogias, held temporarily the current duties of the office of Agency Surgeon in addition to his own duties, with effect from 16th May 1907, till further orders

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

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BOOKS, REPORTS, &c, RECEIVED —

Burma Sanitary Report
Punjab Jails Report
U P Jails Report
H Campbell's Treatment (Baillière Tindall and Cox) Report of Medical Research Institute F Malay States, The Sleeping Sickness Commission's Reports

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

Capt Kenrick, I M S, Saugor
Lt Col Drury, I M S, Calcutta
Lt Col Bentley Simla
Major Murray, I M S, Calcutta
Major Nolan, Burma
Major Corrie Hudson, I M S, Secunderabad
Capt P Dee, I M S, Bassett
Major Maynard, I M S, Calcutta
Dr B Ghosh, Calcutta
Dr D Somerville, London
London Tropical School
Dr J J Brachio, Daltongunge
Surgeon General, Madras, Lt Col Echth, I M S, Lansdowne

Original Articles.

NOTE ON THE METABOLISM OF NATIVE PRISONERS IN THE PRESIDENCY JAIL, CALCUTTA

By D. McCAY M.B., B.Sc.,

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ASSISTANT SURGEON,

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ASSISTANT SURGEON,

Assistant in Physiological Chemistry, Medical College, Calcutta

[From the Physiological Laboratories, Medical College, Calcutta]

THE investigations recorded in this article were carried out in the physiological department of the Medical College, Calcutta. They form part of an enquiry on the metabolism of natives of India, the metabolism of native prisoners being one of the lines of research made use of in order to obtain some idea of the conditions of nutrition existing generally throughout India.

As the results obtained would appear to be of more than mere scientific interest, a short note is now published, indicating some of the more important and interesting points. This investigation, as will be evident, has a very distinct bearing on the much discussed problem of the present day, viz., the dietary standards or food requirements of the healthy adult.

In this paper, however, we propose to deal only with the practical side of the question—of

the suitability or the reverse of the diet-scales of prisons in Bengal—leaving the scientific significance of these and of other similar investigations for a future time.

Physiologists, from observation and experiment, have arrived at certain conclusions regarding the requisite amounts of food necessary for the maintenance of health. Certain standards of diet have been set up which have received more or less general acceptance, of these, the following* may be quoted as fairly typical—

TABLE I

Authority	Von	Ranko	Molischott	Forster	Atwater	Schmidt
Proteids	115	100	140	131	125	105
Carbo hydrates	500	240	550	494	400	341
Fats	56	100	40	68	125	63
Fuel value	3,000	2,324	3,160	3,195	3,315	3,235

These scales being taken as the dietetic standards adopted generally throughout the civilized world, our first duty will be to enquire how those laid down for native prisoners in Bengal compare quantitatively with regard to the different food elements.

In order to carry out the comparison, samples of each different kind of food material made use of were obtained from the Superintendent of the Presidency Jail, these were analysed and the percentage amount of each proximate principle determined.

The following table gives the average results obtained from the samples, the analyses given by other authorities are also added—

* From Clittenden's Physiological Economy in Nutrition

TABLE II

FOOD STUFF	Proteid	Carbo hydrate	Fat	Ash and Minerals	Authority
Rice	6.39	53.30	15	76	Medical College, Calcutta
Do	6.94	77.64	51	53	Blythe
Do	11.50	67.10	2.90	7.5%	Notter and Firth
Atta	12.04	68.65	1.85	3.85	Medical College, Calcutta
Do	19.69	56.20	3.95	4.09	Notter and Firth
Channa	21.20	59.00	4.20	5.66	Medical College, Calcutta
Do	19.86	57.30	3.20	4.70	Church
Arum dhul	17.10	55.70	2.60	8.34	Medical College, Calcutta
Do	23.25	59.40	2.70	12.20	Church
Masur dhul	24.81	54.70	1.85	2.55	Medical College, Calcutta
Do	9.50	70.70	3.60	6.09	Blythe
Muize	9.85	68.41	4.60	3.70	Church
Do	25.46	57.35	1.83	4.00	Koing
Potatoes		69.70		4.68	Medical College, Calcutta
Cabbage	1.79	67.40		6.90	Blythe
Mustard oil	5.00	20.56	16	5.30	Do
Goat's flesh		7.80	50	1.72	(Average) Koing
Fish (trunk)	24.06		99.78	1.20	Notter and Firth
Do	17.50		2.50	1.10	Medical College, Calcutta
Milk (bizaru)	18.10		7.14		Do do do
Vegetables (mixture of cabbage, carrots, turnips, spinach, cauliflower)	2.12		2.90		Do do do
	2.05	5.33	1.92		Pavy
		34		1.05	Medical College, Calcutta
					Medical College, Calcutta, and various authorities

The different scales of diet were obtained from the Jail authorities and the percentage composition worked out, shown in table III

TABLE III

Labouring Bengalis	Rice	Wheat Flour	Maize	Sattoo	Molasses	Dhal	Vegetable	Mustard Oil	Total constituents in grammes
I { Proteid O Hydrate Fat	47 39 613 00 1 10				—	33 79 97 46 5 44	3 18 9 06 1 58		84 66 719 52 24 47
II { Proteid C Hydrate Fat	39 85 519 54 93	10 86 63 40 2 74				33 79 97 46 5 44	3 48 9 06 1 58	17 35	87 98 689 46 27 04
III { Proteid C Hydrate Fat	39 85 519 54 93			21 65 48 77 1 55	19 75	33 46 97 46 5 44	3 48 9 06 1 58	17 35	98 77 694 58 25 85
Labouring Beharis									
I { Proteid O Hydrate Fat	28 98 377 84 2 67		35 90 232 73 17 00			33 79 97 46 5 44	3 48 9 06 1 58		102 15 717 09 43 04
II { Proteid C Hydrate Fat	28 98 377 84 2 67	32 60 190 22 8 22				33 79 97 46 5 44	3 48 9 06 1 58	17 35	98 85 674 58 34 26
III { Proteid C Hydrate Fat	21 74 283 38 2 21	42 47 253 53 10 96				33 79 97 46 5 44	3 48 9 06 1 58	17 35	101 48 643 43 36 34
IV { Proteid C Hydrate Fat	21 74 283 38 2 21	32 60 190 22 8 22		21 65 48 77 1 55	19 75	33 79 97 46 5 44	3 48 9 06 1 58	17 35	113 26 688 62 35 35
V { Proteid C Hydrate Fat	21 74 283 38 2 21		35 90 232 73 17 00	21 65 48 77 1 55	19 75	33 79 97 46 5 44	3 48 9 06 1 58	17 35	116 36 688 15 44 13

In the next stage of the investigation Major Mulvany, I M S, the Superintendent of the Jail, arranged for a number of prisoners (volunteers), to assist in carrying out the experiments. Four healthy men of above the average weight for natives, and who had been sentenced to hard labour, were selected from a number of volunteers. Arrangements were made for obtaining an accurate record of the total intake of food and for the total output of excreta—both of urine and faeces.

The method of procedure was as follows—

The ordinary diet for the four prisoners was prepared separately, the quantity of each separate item of food that remained uneaten was accurately weighed, and the total quantity of each constituent in the uneaten portion deducted from the total of the day's diet.

Similarly with regard to the excreta, special arrangements were made for the four prisoners, and the urine and faeces were collected separately—then quantity measured and weighed and sent for analysis. In this work, on the accuracy of which the whole value of the investigation depended, special credit is due to Hospital Assistant Jagat Pati Ray, who spared himself neither time nor trouble in the fulfilment of every requirement for obtaining the data necessary. The prisoners, when the object of the research was explained, became quite interested and loyally carried out the orders issued to them.

The enquiry began on the 13th February 1907, and was completed on the 25th March 1907, observations being made daily except on Sundays. In all a total of complete analyses of

the urine and faeces was recorded on 35 days, for each prisoner.

The points noted were—caste, age, weight, amount of nitrogen in food, quantity of urine excreted in ccs, specific gravity of urine, urea in terms of nitrogen, total nitrogen in faeces, freezing-point of urine, chlorides of urine in grammes, work done.

As there is nothing to be gained, so far as our present object is concerned, in publishing the full list of the 140 observations made, a selection of the analyses on six consecutive working days is shown for each prisoner. See table IV.

Now we are in a position to examine these tables in detail and determine the practical deductions that may be drawn regarding the suitability or otherwise of the diets.

On examination of table III and on comparing it with the diet-scales given in table I, it is evident that the diets laid down for labouring Bengalis show

- 1 A deficiency in proteid
- 2 A large excess of carbo-hydrate
- 3 A low fat element
- 4 A large (very large) excess of salt

1 Deficiency in proteid element—

The highest amount of proteid in the diet for labouring Bengalis works out at 97.77 grammes, the lowest at 84.66 grammes. For labouring Beharis the proteid element is somewhat higher, highest is 116.36 grammes, lowest 98.85 grammes.

These are inferior to the average of proteids present in the diets shown in table I, and for the Bengalis are inferior in proteid to Ranke's diet-scale, the lowest of all in proteid. Further,

TABLE IV

Day	No	Cast	Age	Wt	Amt of N in food	Urine in C's	Sp Gr of Urine	Urea in terms of N	N in Faeces	Increasing point	Chlorides	Work done	REMARKS
1	4929 A	M	31	123½	14 40	1502	1012	7 98	3 79	1 42	28 18	Hard	½ oz NaCl extra
2	"	"	31	121½	14 40	2413	1015	9 57	3 95	1 33	37 64	Labour	
3	"	"	31	123	14 40	1675	1013	7 42	3 02	1 30	22 94	"	
4	"	"	31	122½	14 40	2834	1010	9 46	2 83	1 13	38 04	"	
5	"	"	31	124	14 40	1958	1016	8 77	4 83	1 12	32 51	"	
6	"	"	31	124½	14 40	2058	1011	8 16	3 97	1 37	32 92	"	
1	7183 A	H	22	135½	14 20	3670	1008	11 13	6 31	54	33 39	Hard	½ oz NaCl extra
2	"	"	22	136	11 20	3100	1007	8 67	2 30	71	20 77	Labour	
3	"	"	22	135	13 46	3570	1005	9 16	2 77	62	19 63	"	
4	"	"	22	134½	14 61	3280	1016	8 41	3 71	77	27 85	"	
5	"	"	22	135	14 40	3305	1006	8 56	3 62	55	31 73	"	
6	"	"	22	136½	14 40	3420	1010	9 90	5 66	1 18	46 17	"	
1	8614 A	M	28	128	14 60	1502	1018	7 77	4 98	1 75	35 85	Hard	½ oz NaCl extra
2	"	"	28	128	14 40	2810	1010	11 80	2 39	96	32 87	Labour	
3	"	"	28	128½	14 60	1830	1018	9 39	3 31	1 81	37 33	"	
4	"	"	28	128	14 40	1916	1020	10 32	3 31	2 03	35 44	"	
5	"	"	28	129	14 40	1690	1018	10 25	2 12	1 83	36 67	"	
6	"	"	28	128	14 40	2839	1011	10 26	4 35	1 35	35 48	"	
1	6110 B	H	35	120	14 40	2158	1014	7 92	4 97	1 37	27 78	Hard Labour	½ oz NaCl extra
2	"	"	35	119½	14 40	937	1007	7 36	3 77	62	29 45		
3	"	"	35	120	14 60	2370	1011	9 95	6 83	1 12	29 86		
4	"	"	35	118	14 40	2583	1011	10 24	4 26	1 23	30 47		
5	"	"	35	118	14 40	2867	1015	11 37	1 23	1 48	48 73		
6	"	"	35	119	14 40	3094	1010	10 46	1 06	1 13	35 58		

Weight is given in grammes throughout. The prisoner's weight in lbs. Nitrogen of food and feces was estimated by Kjeldahl's method. The average amount of Salt in the diet was 30 grammes (area).

when we examine table IV we find that the daily amount of proteid present in the food of the four prisoners under observation averaged about 90 grammes (1 gramme N = 6.25 grammes proteid, $14.40 \times 6.25 = 89$ grammes proteid). These men were on hard labour. This is 10 grammes lower than Ranke's diet and no less than 40 below that of Moleschott.

On looking more closely to see how this 90 grammes of proteid is obtained, we get an interesting view of the diet. More than half the total proteid, accurately 47.39 grammes, is derived from the rice of the food, only 2.48 grammes coming from the more easily digested fish. The remaining amount of proteid is derived principally from "dhal," a trifling portion coming from the vegetables and condiments.

Taking this figure 90 grammes as the maximum daily proteid intake, we have to estimate the total quantity of this that is absorbed and of real service in the system.

This may be arrived at in two ways, either directly by estimating the quantity of nitrogen excreted in the urine, or indirectly by subtracting the amount of nitrogen passed in the faeces from the total nitrogen intake. (The quantity of nitrogen leaving the system in the shedding of epithelial scales, hairs, sweat, semen, etc., may be neglected.) One of the most important points brought out in this investigation is the large amount of nitrogen passed in the faeces, the average quantity for the whole series of observations working out at practically 4 grammes nitrogen daily. We have, therefore, to deduct this $4 \text{ grammes} \times 6.25 = 25$ grammes proteid from

the 90 grammes proteid in the food to obtain the real proteid intake.

Therefore, on the best possible terms, the real daily proteid intake is only 65 grammes and not 90 grammes as it would appear. With regard to the significance of the large amount of proteid matter passed in the faeces we shall have something more to say.

The question at once arises whether this amount of proteid is sufficient to meet all the nitrogen requirements of the body or not. All the evidence would go to prove that it is quite sufficient. The average weight of the prisoners may be taken at about 57 kilos, a good deal above the average of natives in Bengal. From this we can calculate the nitrogen requirement of the body per kilo of body-weight. We have shown, on an average, that 65 grammes proteid are absorbed and utilized from the diet, this is equal to 10.4 grammes nitrogen.

Therefore, $\frac{10.4}{57} =$ nitrogen per kilo of body-weight = 0.18 gramme nitrogen.

Translating this into terms of proteid matter daily, it means the utilization or metabolism of 1.125 grammes proteid per kilo of body-weight.

That this amount of proteid is sufficient for all requirements is evident from the fact that the men were able to carry on their work without distress or loss of weight. Further, from the results obtained from Chittenden's researches on metabolism, it is recognized that the metabolism of as small an amount as 0.625 gramme proteid per kilo of body-weight is quite sufficient to meet all the requirements of the body,

health, strength, mental and physical vigour being maintained unimpaired, and this on a diet very much lower in carbo-hydrates than that of the prisoners

In addition to this, from the result of researches carried out in this laboratory on the nitrogenous value of the food of natives other than prisoners, it would appear that their proteid value is not, by any means, up to the standard of the prison scale

2 The large excess of carbo-hydrates

This is due almost entirely to the quantity of rice provided in the diet, up to 26 ounces daily. The carbo-hydrates work out to about 700 grammes daily for Bengalis, and slightly under this amount for Beharis. This is very high compared with the diet-scales shown in table I.

The large amount of carbo-hydrate present would appear to serve a threefold purpose—

(1) To make up for the deficiency in the fat element

(ii) It is used as a means of introducing into the diet more than half of its total proteid element. As we have already shown, this is a most wasteful method considered even so far as nitrogen alone is concerned.

In all probability 50 per cent of the nitrogen taken in the form of rice and "dhal"* passes out in the faeces unabsorbed, at least, this is so, when such large quantities are partaken of.

(iii) The excess of carbo-hydrate over ordinary bodily requirements may be made use of in the system to serve as a proteid spare. As it is necessary to give very large quantities of carbo-hydrate or fat to spare even a small amount of proteid, there must necessarily be a large wastage.

3 The deficiency in the fat is not of any great importance, the large excess of carbo-hydrates more than compensates for it.

The fuel value of the diets works out at an average of 3,380 calories, which is very similar to that of diet standards generally accepted. The defect, from this point of view, of the prison diet being that 2,870 of the total 3,380 calories comes from the oxidation of the carbo-hydrate element.

4 The very large excess of salt

The last point calling for remark is the immense quantity of salt consumed by the prisoners. In addition to the salt normally present in the food-material, an extra amount up to, in most cases, an ounce a day is added to the food when being prepared. This brings the total salt intake to over 30 grams daily. On referring to table IV, it will be seen, that this large amount is eliminated, on the average, daily in the urine.

Physiologically the presence of 4 to 6 grams of salt in the daily diet is a sufficient protection against a loss of chlorine from the blood and tissues, this amount covering all the physiological requirements of the body. Any quantity

consumed beyond this must be looked on as so much waste.

What is the effect of this large salt intake? Staub states when the salt intake reaches 0.6—1.1 grams per kilo of body-weight diuresis and augmented nitrogenous metabolism sets in. In the prisoners under observation Staub's lower limit was exceeded and, as will be seen from table IV, diuresis was a marked feature in every case where the salt intake was high. This is in accordance with what one would expect and with common experience. Salt taken in excess must be either eliminated or retained within the system, whether one or the other occurs, water must be taken in in sufficient quantity to form a solution of 55 per cent.

If the kidneys are normal, this excess of salt and water is quickly got rid of in the urine, but as the kidneys are only able to excrete a dilute saline solution, a large quantity of water must be excreted in order to eliminate the excess of salt—hence the thirst and diuresis.

If, on the other hand, the kidneys are diseased and the condition termed "renal impermeability" to chlorides be present, the excess of salt is not got rid of and, as a result, fluid is retained in the blood and tissues—the body-weight increasing. Should these conditions continue for any length of time, oedema must inevitably ensue. If we take a healthy person with a normal salt intake, and on whom salt equilibrium is established, if now, the salt intake be greatly increased, there will be at once a great increase in the amount of salt eliminated in the urine, but the output will not be quite equal to the increased intake, so that some must have been retained in the tissues and along with it sufficient fluid to form an isotonic salt solution. There must, therefore, be an increase in body-weight in proportion to the degree of salt retention. Later when the person becomes accustomed to the excessive salt intake, the system becomes raised, as it were, to a higher level of salt metabolism, and all excess of salt above this level is eliminated so that salt equilibrium again becomes established. On diminishing the salt intake the reverse conditions hold good.

In connection with the large amount of salt normally consumed by Bengalis, investigations on the salt concentration of the blood serum* shows a higher percentage in Bengalis than in Europeans. The dilution necessary to keep this extra salt in the proper isotonic solution may, to some extent, assist in explaining the hydraemic condition of blood—so common in Bengalis—with its accompanying low percentage of hæmoglobin and diminution in the number of corpuscular elements.

GENERAL SUMMARY

It is evident from the above arguments that the diet provided in Bengal Jails is amply

* See foot note on page 325

* McCay, *Lancet*, June 1st, 1907

abundant, as already shown, the more important proteid element is more than sufficient to cover the nitrogenous metabolism of the body, and, compared with the standards laid down by Chittenden, the diet may be looked on as very liberal. While this is true, we must not overlook the fact that the absorbable proteid is only about 50 per cent of that in the usually accepted standards. This quantity, Chittenden holds, is as much as is necessary. But most other authorities are of a different opinion, and Chittenden's standards have been severely criticized by Halliburton, Hutchison, Benedict, and von Noorden.

Benedict, in particular, raises the very important question of the effect of an abnormally low proteid diet on the power of absorption of nitrogenous products from the alimentary tract, and also, of the effect of a diet low in proteid on the secretions of the body, particularly on the digestive juices. These results obtained in dogs on a low proteid diet with abundant carbohydrate and fat suggest a grave danger.

Further, Jaffa and Siven believe that after the body has suffered a loss of nitrogen, there is at once an effort to attain nitrogenous equilibrium, so that any gain of nitrogenous body-material is a comparatively slow process. It would, therefore, follow that the living substance of the tissue protoplasm can only be *slowly* formed from the proteid of the diet. This, Jaffa holds, should serve as a warning to anyone contemplating any appreciable decrease in the proteid of the daily diet.

Chittenden, on the other hand, attaches more importance to the other side of the question, *viz.*, the possible danger to the body from the physiological action of the larger amounts of nitrogenous waste products resulting from an excess of proteid food, and, on the danger of intestinal putrefaction and toxæmia when from any cause the system loses its ability to digest and absorb the excess of food consumed.

The great defect of the prison diet is brought out when the faecal nitrogen is estimated. We find between 20—30% of the total proteid intake passes out unchanged. This result is in marked contrast to what Chittenden attained in his experience, where the amount of faecal nitrogen was very small. On this, he lays great stress, as showing the poor opportunity afforded for intestinal putrefaction and toxæmia on the low but digestible proteid diet on which his results are based. The bearing of this large residue of undigested and non-absorbable proteid material in the alimentary canal—the sport of putrefactive micro-organisms—on the epithelial lining of the mucous membrane is a matter of the highest importance, and must be taken into account in any consideration of the suitability, or otherwise, of the diet in jails.

All our knowledge would lead us to believe that the predisposing conditions for intestinal irritation and toxæmia are present and, when

from chill, lowering of vitality or any other cause that temporarily lessens the intestinal function, this must be particularly so. In connection with this view, it would be interesting to obtain statistics of the incidence of dysentery, diarrhoea and other intestinal disorders in the jails of Bengal and compare it with other jails where the diet is not so largely composed of rice and 'dhal'.* We would be strongly of the opinion that the combination of a rather low absorbable proteid intake with a large non-absorbable nitrogenous residue, must bear a close relationship to the incidence of intestinal troubles prevalent in Bengal jails.

The usual quantity of nitrogen that passes in the faeces unabsorbed from an ordinary mixed diet is from 0.70—1.20 grammes. From result of unpublished experiments in healthy Bengalis, on a diet of their own choice, the average quantity of nitrogen of the faeces was about 1.4 grammes. It would, therefore, appear that the undigested residue of the prison diet is three times more than the normal.

CONCLUSIONS

1. While the diet is amply sufficient in proteid to meet all the requirements of the nitrogenous metabolism of the body, the proteid element is presented in a form assimilable with difficulty.

The result of this is

(i) The large nitrogenous residue is likely to set up intestinal catarrh and predispose to dysentery.

(ii) From an economical standpoint alone, it is a serious matter, when the large number of prisoners to be provided for is considered.

We may take it that 20 per cent—30 per cent of the food is pure waste, at least, so far as its most important element—nitrogen—is concerned.

2. The carbohydrate element is far in excess of the bodily requirements.

3. The salt† in the diet is over five times the amount required physiologically for the needs of the system. And more than three times the amount usually consumed by Bengalis free of choice.

Its effect is —

(i) To cause thirst and diuresis.

(ii) To increase the salt concentration of the blood and tissues and thus keep the tissues in a

* We have not been able to touch on the question whether the large nitrogenous residue in the faeces is due to the rice or to the dhal. Experiments have been carried out with a view of throwing light on the question, but the results were not sufficiently definite to base an opinion on, as far as they went, however, their tendency would be to incriminate the dhal.

† If the view advanced in the text of the relationship between the diet and the incidence of dysentery should be found to be true, in all probability, the real cause will be the quantity and quality of the dhal in the food. Further investigation on this point will be taken in hand and completed as soon as possible.

† The average amount of salt passed in the urine in 24 hours by Bengalis on a diet of their own choosing works out, in a series of over two hundred observations, at about 10 grammes.

more or less water-logged condition causing a rise in body-weight

(iii) In renal disease and probably also in the different forms of anæmia such excess of salt intake would most likely cause cedema and ascites and eventually a condition of chloræmia and death

We have to express our thanks to Major Mulvany, I M S, and Hospital Assistant Jagat Pati Ray for the admirable arrangements they devised for the carrying out of the investigation

THE WORK OF THE JULLUNDUR CIVIL HOSPITAL IN 1906

BY H. SMITH, M.D.

MAJOR, I M S,

Civil Surgeon

In this paper I shall be as brief as possible and shall draw attention to only a few points which may be of interest to some of your readers

There were 33,233 patients treated as out-door and 5,168 as in-door, during the year. Of the 5,168 in-door patients 260 were dieted at the expense of the institution, the remainder made their own arrangements for their diet. With us for patients to make their own arrangements for diet is an easy matter. Almost every in-patient brings with him a friend to be his sick attendant while in hospital. A simple standard diet is prescribed. One or two food providers in the city get permission to go round the hospital with the food ready, on condition that the food is to be of good quality and to be sold at reasonable rates.

From them the sick attendants buy what they require for themselves and for their patients. The patients dieted by the institution have a ticket on the food provider who is paid on the ticket by the institution at the end of each month. Such patients are made aware of the quantity and quality of the food they should get and are instructed to complain if there is reason as regard quantity and quality. I mention these facts to show that the system is at once agreeable to the patients and to their relatives, and to show how it lessens the work of our small staff which consists of the Civil Surgeon, one Assistant-Surgeon, one Hospital Assistant, and four dressers who are also compounders, for all non-menial hospital work, records included. It will be understood that it is important to consider the economy of labour when I say that in certain months of the year we have over 500 beds full. A larger establishment would be desirable, but we can only spend about Rs 10,000 yearly on the hospital including every thing except the pay of the commissioned officer.

THE SURGICAL CASES were as follows —

Excision of tumours — Malignant, 24, innocent, 42, cysts, 63. *Drainage of abscesses*, 590

Removal of foreign bodies — Needles from the hands and feet, 16. *Excision of varices*, 2. *Excision of diseased lymphatic glands*, 58 cases. *Excision of the gasserian ganglion*, 1. *Scraping and grafting of chronic ulcers*, 16. *Necrosis of bone* — Removal of sequestra, 49 cases. *Tiephining for abscess of the tibia*, 1. *Operation on united fractures*, 2. *Setting of recent fractures*, 65. *Reduction of dislocations*, 11. *Incision and drainage of the knee-joint*, 1. *Excision of joints*, 2. *Amputations of the lower limb at varying levels*, 13, not including phalanges. *Amputations of the upper limb at varying levels*, 11, not including phalanges. *Tiephining of the skull for injury*, 4. *Rhinoplasty*, 3. *Harelip*, 10. *Plastic operations on the lips*, 2. *Removal of nasal and naso-pharyngeal adenoids*, 8. *Operations on the eyelids* — Ectropion, 5. Entropion and trichiasis, 1,507. *Symblepharon*, 1. *New growths*, 2. *Operation on pterygium*, 53. *Excision of the lachrymal sac*, 10. *Sarcoma of the lachrymal gland*, 3. *Eyeball* — Artificial pupil, 1,036. *Iridectomy for glaucoma*, 589. *Extraction of cataract*, 2,962. *After-cataract*, 3. *Removal of foreign bodies*, 6. *Abcission of staphylomata*, 36. *Excision of the eyeball*, 15. *Clearing out of the mastoid and middle ear for disease*, 3. *Excision of bronchocele*, 4. *Excision of the breast*, 3. *Paracentesis abdominis, dropsy*, 18. *Laparotomy for intestinal obstruction*, 3. *Excision of the vermiform appendix*, 1. *Radical cure of inguinal hernia, strangulated and other*, 16. *Excision of the spleen*, 1. *Nephrotomy*, 2. *Nephrectomy*, 1. *Fistula in ano*, 18. *Excision of the rectum for stricture*, 10, for cancer, 1. *Whitehead's operation for piles*, 9. *Imperforate anus*, 2. *Enucleation of enlarged prostate*, 12. *Stone in the bladder*, 153, by lateral lithotomy and lithotomy, 16 with one death, 137 by litholapaxy with three deaths. *Hydrocele* — excision of the sac, 3, stricture of the urethra, 11. *Ovariectomy*, 1. *Difficult labour*, 1. Many things of a minor nature there are which would be tedious to enumerate.

The above facts illustrate the incidence of surgical diseases at this hospital.

Diseased lymphatic glands — The cases here noted were chiefly of the neck. My experience of removal of diseased lymphatic glands of any region is that all the glands of the region should be removed whether apparently diseased or not, as if any are left, the patient is sure to come back before long with them diseased. By the term "region" applied to the neck I mean the whole side of the neck and not a group merely. Of course in certain cases it may be advisable to remove a few and wait events, but I generally prefer to let the patient wait for some time until a number of glands become enlarged. The operation is much easier then and less disappointing to the patient. Of the many cases in which I have removed the diseased glands of the neck I have only seen one case in which tubercle of the lung followed, and in this case

I am of opinion that the operation hastened up the matter

An entering the internal jugular vein—In my career I have had one case of an entering the internal jugular vein which is interesting as the accident is more frequent than published cases would lead one to think and as the published facts are so meagre. In this case I had to ligature the vein at about the middle of the neck. Before commencing to stitch up the wound I observed that I had left one gland near the collar bone and on removing it a small vein was torn close to its entrance into the internal jugular, the patient gave two or three gasps exactly as the amputated head of an animal gasps or like the last gasps of a fish out of the water and she was dead. No struggle, no cyanosis, nothing else noticeable. Pulse and respiration instantly stopped. In operating on glands in the neck it is advisable to expose the internal jugular vein as low down as will be required as early as possible, and to operate from below upwards. This is also the easiest way as the glands are loose in the lower part of the neck. When exposed, the jugular vein can generally be separated from the glands with the fingers. If any bleeding occurs from the vein, there is little danger so long as the vein is full of blood as it normally is, if not put on the stretch, it never should be put on the stretch. If a ligature has to be put on the vein, it should be put on as low down as possible. Injury to the vein below the ligature where it is empty is certain to involve entrance of air, hence the importance of commencing low down, and if from a tear in the vein anywhere the importance of putting on the ligature so low that in completing the operation there will be no chance of injuring the vessel below the ligature. If that vein had not been rendered empty by the ligature, air would not have entered. When taking off forceps from minor bleeding points close to the internal jugular vein, it is advisable to stop the circulation in it by a finger pressed on the vein low down which will cause it to become full and to show leakage if there is any.

Gasserian ganglion—This is the second case in which I have excised the gasserian ganglion for epileptiform facial neuralgia. It is an operation in which there is no difficulty and no danger if the operator be experienced, and if he has carefully explored the region on the dead body and made out his own plan definitely—the plan which he will adopt no matter what others do. I satisfied myself on the dead body that the Horsley-Krause route was infinitely inferior to the low route. By the Horsley-Krause route a large piece of bone is excised above the level of the zygomatic arch, which arch is left intact. The membranes have to be stripped from the bone from the margin of the hole made in it over to the ganglion and middle and lower divisions of the nerve, a distance of from an inch to $1\frac{1}{2}$ inches, the membranes and brain elevated over that

area for space—a space which weeps freely and which weeping there is no means of controlling efficiently. The operator must thus be working very much in the dark, and is liable when finished, to have not satisfied himself that he has done what he wanted to do. Let any one try it on the dead body, and I think, he will agree with me. By the low route the operator can see exactly what he is doing. By the low route extra-cranial hæmorrhage may be more free, but that can be easily controlled and is of no importance. I make an **H**-shaped incision, the cross bar being over the zygomatic arch. I cut the arch as far back as will just avoid the joint, and as far forward as will expose the space beneath it fully, so as to get the maximum room possible, and pull down the masseter and skin with it. I cut the temporal process off the lower jaw as close to the ramus as possible, again to get room, and pull up the temporal muscle with it. I then scrape the external pterygoid muscle off with a raspator and clean as much of the bone as I will require, and fully expose and define the inferior division of the nerve at its exit from the skull. I bore a trephine hole outside and in front of the foramen ovale and with a punching forceps complete the opening into the foramen ovale and enlarge it forwards as far as the pterygoid process will admit of and enlarge it outwards and above the infra temporal crest. I then get a long-handled blunt hook with a small curve over the middle division of the nerve at its entrance to the foramen rotundum to which my opening in the bone is quite close. If there is any doubt about it, the end of the blunt hook can be used to find the foramen rotundum, and when found, we are certain of the geography of that part of the nerve. By pulling on the blunt hook the nerve is put on the stretch, and the fascia over it back to the ganglion is incised, and the nerve separated back to the ganglion with the blunt hook. With a forceps on both nerves they are now cut as distal to the ganglion as circumstances admit of, and the base of the ganglion swept off with the knife. A strip of gauze is now placed in contact with the duramater, its tail to hang out of the wound to act as a drain for any oozing which may occur for 24 hours and the tissues replaced, the zygomatic arch being pressed deeper than its normal position, so that it will not stand out as a deformity when the muscles waste as they necessarily do. By the low route you can see exactly what you are doing, and when finished you know that you have done the essential thing which you want to do, which are not so with the high route. Of course, there is more trouble with extra-cranial hæmorrhage by the low route, but those who are afraid of a little bleeding should limit their field of operations. No patients are so grateful as these cases.

Gouties—I have excised a good number of gouties, and I early learned by experience, what we all know, that these cases had a peculiar

liability to not only dying on the table, but within half an hour after leaving it from the effects of chloroform. Instead of chloroform I tried the effects of 5 oz of rum as an anæsthetic, commencing to operate as soon as they got under the influence of it, without any other anæsthetic. The patients behaved very well, but the after-effects were, though not so depressing as chloroform, yet objectionable. What I now use is a hypodermic of half a grain of morphia without any other anæsthetic, except a streak of carbolic acid along the line of the skin incision. They seem in this way to suffer very little, and the after-effects are not objectionable. Points of importance in this operation are to be very careful to not injure the laryngeal branches of the vagus nerve and to thoroughly stop all bleeding before finishing up, as the most trifling oozing in these cases seems to go on indefinitely. I am looking out for a local anæsthetic of efficiency without the danger of cocaine, an agent I am afraid of using in the large quantities used by its advocates.

Chloroform—This is a suitable place for a note on the chloroforming of heavy liquor drinkers. We all know that they do not behave well under chloroform, that they are difficult to chloroform and that they require an enormous amount of it. When a student I remember seeing a patient of this class brought into hospital for an accident. He was not drunk, but was distinctly under the influence of liquor. What struck me then and since was that he was as easily chloroformed as a child. I find that by giving such patients a "ration" of whisky or rum, not enough to just make them drunk, and when they get under its influence, I find that they behave admirably with chloroform and do not require the objectionable amount of it which they otherwise would.

Sarcoma of the lachrymal gland—This is an organ in which sarcoma is not infrequent. In the two cases noted I had to excise the orbital plate of the frontal bone freely as the tumour was attached to it. The cases did well.

Necrosis of bone—I had one case of interest. It was a case of necrosis of the vertex of the skull—syphilitic. At one sitting I removed the whole of the frontal bone above the orbits, the whole of one parietal and about a third of the other, and brought the scalp over the region with a few gauze drains beneath. He did well, I saw him a year afterwards, none of the bone was renewed. The brain could be felt pulsating all over the region from which the bone had been removed. His forehead was a little flattened and deformed. The man was in excellent health and doing his duty as a clerk in a railway office. In this case nature shows us how little we need fear the removal of a piece of skull.

Imperforate anus—A troublesome little operation. A point which I think might be of interest in this operation is the use of an ex-

ploring trocar. The pelvis being so small as to not admit more than the terminal pharynx of the index finger, there is little room for dissecting. I make a liberal sized wound up as far as the tip of the index finger can feel easily. I then pass an exploring trocar in the direction in which the bowel should be. On drawing the trocar out of the canula, fecal matter will be seen on the end of it if it has been in the bowel. The canula can then be used as a guide for enlarging the opening.

BLACK WATER FEVER IN BURMA

By LAWRENCE G. FINK, M.B., C.M. (LOND.),

Civil Surgeon, Myittha, Burma

THE appeal of the Planters' Association to the Government for a special inquiry into the nature and prevalence of black-water fever in the Duars has aroused fresh interest in this deadly disease. The recent views of a professor in the Liverpool Tropical School have been commented on in the *Indian Medical Gazette* of June last. Dr. Stephens, in his note on the geographical distribution of black-water fever mentions certain parts of India, but nothing is said as to its occurrence in Burma. The only reference that I can find to its occurrence in Burma is by Dr. E. Marchoux (*B. M. J. Epitome*, page 40, September 8th, 1900). I am unable to say how he got his information. On the 5th September, 1899, there was a leader in the *Rangoon Gazette* on some interesting facts as to black-water fever from the Foreign Office Report entitled "Trade and general condition of the British Central African Protectorate for 1898-9." The Report was written by Dr. Gray, the Medical Officer of the Protectorate. When the leader in the *Rangoon Gazette* was read by me, I wrote as follows under date 7th September 1899.

"With reference to your leader in your issue of the 5th instant on the subject of black-water fever, it may interest some of your readers to know that a case of the disease occurred last month at Myittha. The patient was a Gurkha, belonging to the Military Police Battalion. The symptoms exhibited and the general course of the disease were quite characteristic. After a few days' illness the patient died in hospital. A detailed account of the case will shortly be sent for publication in one or other of the Medical Journals.

The late Colonel A. Crombie, I.M.S., who was an acknowledged authority on the fevers of India, said at the 66th Annual Meeting of the British Medical Association held at Edinburgh in July 1898 that the disease is practically unknown in India. Several cases, according to Dr. L. Sambon have, however, been reported from India and Assam, but no mention is made of Burma in his detailed list of the geographical distribution of the disease, and I am unable to

trace any published case reported from this Province

The late Dr. Weatherly, who lived for several years at Kuseong and also had an extensive experience in the Darjeeling Terai and Duars, is said to have met with several cases, and recently eleven cases have been reported in the Journal of Tropical Medicine by a Surgeon from the Duars, so that the disease in India is probably not so uncommon as it was thought once to be.

If, as is thought by some authorities, black-water fever is a form of severe malarial poisoning, one would hardly expect it to be unknown in parts of Burma where malarial fevers are as prevalent and as fatal as in the Duars and Assam.

The particulars of the case referred to have not been published in any medical paper, and I got no information in response to my enquiry except from Dr. H. E. Wells, who, in 1904, informed me that he had had two cases at Mogok (Ruby Mines District) and one at Taungdwingyi (Magwe District). I have also recently heard of two other cases, one at Katha and the other in the Ruby Mines District.

The patient who came under my treatment in 1899 was a Gurkha Military Police Sepoy, aged 22 years. In May 1899 he was admitted into Hospital for malarial fever and was discharged after seven days. He was again admitted on 3rd July suffering from malarial fever and was discharged on the 13th idem, his temperature having been normal for the last five days.

On both these occasions he was given the usual diaphoretic treatment during fever and quinine 10 grain doses *t d s* when the temperature came down. On the 30th July he again came to hospital complaining of great weakness and also of pain in the epigastrium and loins. His eyes were somewhat yellow, liver and spleen were slightly enlarged. His temperature for the next three days was normal in the morning, but 102°F, 100°F, and 104°F in the evening. He had been treated with the usual diaphoretic and quinine. He now complained of intense nausea and vomited several times. He also passed several motions. The vomit and faeces were dark greenish-brown. Epigastric and lumbar pain, also tenderness over the liver in the region of the gall-bladder. On the 3rd August the temperature, morning and evening, was 100.4°. Eyes and skin deep saffron yellow, urine scanty and almost black in colour. 4th to 12th August, temperature normal, vomiting persistent, bloody urine passed in small quantity. On the 8th urine became almost entirely suppressed, patient was unable to retain anything, became weaker daily and died on 12th August.

Examination of Urine—On standing it separated into 2 well-marked layers, as described by Manson, an upper clear though very dark port-wine tint and a lower somewhat brownish grey. On boiling, the urine became almost solid.

Under the microscope granular matter and epithelial shreds but no blood corpuscles.

Post-mortem—12 hours after death, liver slightly enlarged and yellowish-brown on section, gall bladder fully distended with bile which was like treacle in colour and consistence. The same sticky substance was found in the stomach and intestines. Spleen and kidneys slightly enlarged and congested. Bladder empty.

This was an undoubted case of black-water fever, subsequent to malarial fever treated with quinine. To what extent the kidneys were damaged, I am unable to say as his urine was not examined till the onset of hæmoglobinuria.

So far as I know, the three cases at Mogok and the other ones at Katha and Taungdwingyi were Europeans. I have no details as to their history, treatment or termination, except as regards the one at Katha which ended fatally. We have thus four stations in Burma where black-water fever is known to have occurred. As in India, so in Burma, there is malaria and malaria, but at the places where black-water fever has occurred, the intensity of the malaria is undoubted. This goes far to support Dr. Stephen's view "that the intensity of malaria displays itself in black-water fever." In Myit-kyina the comatose, convulsive, choleraic varieties have all been met with, also cases of partial paralysis and severe peripheral neuritis and one case of acute mania after malarial fever.

In the *British Medical Journal*, dated 10th February 1906, pages 314-15, Dr. Masterman has called attention to cases of black-water fever occurring in Palestine. He points out that Jerusalem is an exceedingly malarious place yet black-water fever is not common. He says nothing as to the intensity of the fever. His impression is that black-water fever is commoner all over the land than is suspected. Such too may be the case in parts of Burma, and, unless the urine is carefully examined in all cases of malarial fever, slight cases of hæmoglobinuria are apt to remain undetected. In the interests of the patient too it appears imperative that quinine should not be administered if the kidneys are congested or otherwise not performing their functions satisfactorily. From the literature at my disposal I find that opinions differ as to the use of quinine in hæmoglobinuria. By some the drug is condemned, whilst by others it is used, no doubt with the object of destroying the malarial parasite which is regarded as the cause of the severe hæmolytic.

The elimination of the greater part of the quinine by the kidneys is an important point to bear in mind as repeated doses given to a patient whose kidneys are inactive may lead to severe cinchonism and other "untoward effects," the best term according to Hare with which to qualify the disagreeable symptoms which sometimes come on in persons having an idiosyncrasy to the drug and who are in reality poisoned by

small doses. If the kidneys are in a damaged condition and the excretion of the drug is hindered, the untoward effects can hardly be attributed to an idiosyncrasy. In a patient whose blood has suffered considerably by frequent attacks of malarial fever, the retained quinine may itself cause a severe hæmolytic. The blood pigment may be excreted in the urine causing black-water and in the bile causing the thick treacle-like substance found in the gall-bladder, stomach and intestines. Ringer states that poisonous doses excite great thirst, burning pain at the epigastrium and vomiting. He further adds that when quinine is taken in large quantities, some of it is said to pass off with the fæces. It is reasonable to suppose that if the excretion is not taking place in the urine, some attempt is made to get rid of it through some other channel, most probably through the alimentary canal, and this may account for the early symptoms of black-water fever in malarial cases in which quinine has been given. It may also account for occasional hæmorrhage from the bowel in cases of malarial fever, the so-called dysenteric form of Manson. Reference is made to this complication because it appears to me that it has some semblance to what occurs in black-water fever. In one case the hæmorrhage occurs from the bowel and in the other from the kidneys. Major S. E. Clarke recently read a paper before the South African Medical Congress on the subject of this complication. "In reference to hæmorrhage from the bowels," he says he has met with this complication to malaria in various parts of the globe. This symptom implies from the first, a hand-to-hand struggle with death. It is commoner in chronic than acute cases. Sometimes the patient complains for a day or two previously of abdominal pain, but as a rule the case seems an ordinary one. The patient asks for a bedpan and passes a stool of pure blood, shortly afterwards the bleeding may be repeated. The blood is dark and very liquid with little tendency to clot. The patient presents all the symptoms of a case of severe hæmorrhage and unless the bleeding ceases, death is inevitable. In one case in which a *post-mortem* was obtained, there was nothing beyond a general congestion of the internal organs and a few small intestinal ulcers which could not have caused the bleeding. The literature on the subject is scanty, and the occurrence of this complication to malaria is denied by many, who believe these are cases of dysentery or enteric fever. But hæmorrhage undoubtedly occurs in malaria, in cases which have none of the symptoms of dysentery or enteric. Often the patient has recovered by the following morning, and the temperature throughout is that of malaria.

The cause of the condition is probably similar to that which produces hæmorrhage in small-pox, the parasite altering blood in such a way as to enable it to pass through the blood-vessels

without solution of continuity (*Transvaal Medical Journal*).

In 1896, my Hospital Assistant published notes of "an obscure case of intestinal hæmorrhage" in the *Indian Lancet*, dated 1st September 1896. The notes of the case are as follows—

"At about 2 P.M., on the 13th July 1896 Ali Bux, a native of India, aged 30 years, was admitted into hospital in a delirious condition. His temperature at the time of admission was 101.4° F., pulse full and rapid. The history of his present illness is as follows—

On the previous day, on his way from Fort Stedman to Taunggyi (S. Shan States) (a distance of 21 miles) the patient, a Diabi, had slight fever from 8 A.M. to 12 noon. From 12 noon to 6 P.M., he felt quite well. During the night he felt cold and chilly but was well enough to attend to his work next morning, till about 9 A.M., when the fever again came on and lasted till he was admitted to hospital. A few hours previous to admission he vomited three or four times and had a few loose motions. He then became delirious and was brought to hospital in the afternoon by his friends.

On admission he was put to bed and a dia-phoretic mixture administered. In about an hour's time he regained consciousness and complained of great thirst and pain all over the body. At about 3.30 P.M. (an hour and a half after admission) there was a sudden fall in his temperature, the extremities became cold, pulse at the wrist disappeared and the patient seemed to be sinking fast. Between 2 and 3.30 P.M., he had about a dozen loose stools, blood-stained and watery with no faecal matter. The stools were unaccompanied by any straining, were passed without any abdominal pain and seemed to rush out without any conscious exertion. A cold perspiration broke out on his forehead and the patient had a tendency to relapse into unconsciousness. Hot bottles were applied to his extremities and side of body, while stimulants were administered internally. The pulse could not be felt below the brachial artery at the upper part of the arm. At about 6 P.M. the pulse began to improve, at 7 P.M. he had another blood-stained stool, and three or four more at about 10 P.M., at 12 P.M. he had two more watery stools, but these were not blood-stained. From this time the patient began to improve and gave some hope of recovery. For the next two days the patient had no fever and no motions. He was merely weak and exhausted. With careful dieting and the administration of tonics the patient was able to move about on the fifth day. His subsequent history was uncomplicated, and he was discharged cured.

Previous history—The previous history of the patient's illness is very interesting. He stated that this is the seventh time that he has suffered in the way above described. On each occasion the illness began with vomiting and

fever, the latter lasting one or two days, with intermission as in the present illness, and culminating in diarrhoea with intestinal hæmorrhage. The patient has been about eight years in Burma, but says he is not subject to attacks of malarial fever. He says that as a rule he enjoys excellent health, has a good appetite, and suffers in no way in the intervals of his triennial attacks of fever and hæmorrhage. His family history is of no interest, as none of his relatives suffered in the same way. He has never had dysentery, nor piles. He is not scorbutic and has never bled from his gums.

Physical examination—All his internal organs seem healthy. His liver is very slightly enlarged, spleen normal. On rectal examination no internal or external piles were found.

From some of the patient's statements I was then inclined to think that the hæmorrhage was unconnected with malaria, but from the history of his previous attacks, and the fact that on the previous day he had had fever from 8 A.M. to 12 noon, that the fever recurred again at 9 A.M. the next day, and that the attack was preceded by a cold chilly feeling, that the patient vomited three or four times and then became delirious. I am now of opinion that the case was really one of malarial intoxication. I am unable to say, whether any quinine had been administered or not. The history of this interesting case is reproduced as intestinal hæmorrhage in places where intense malaria prevails is apt to be overlooked or mistaken for dysentery. To prescribe quinine for such cases, as is recommended by some, may aggravate the condition, which has been very aptly described by Major Clarke as a "hand-to-hand struggle with death."

Stephens and Christopher in their *Practical Study of Malaria*, page 305, say that "between this phenomenon (Quinine hæmoglobinuria) and black-water fever there is practically no difference. It is apparently true that cases of black-water fever do rarely occur in which no quinine has been previously administered, and in which we have the exciting cause of "chill," other drugs "exertion," etc., but it does not affect the position that quinine *not necessarily* in large doses, is the common cause of this phenomenon." In the case that occurred at Taunggyi the patient was exposed on a damp chilly day and walked 21 miles with fever on him. The chill probably caused intestinal congestion. In black-water fever the chill would have probably caused a similar renal congestion.

The subject of idiosyncrasy is referred to in all books on therapeutics. The two favourite drugs used for illustrations are pot iodide and quinine. I have personally met with patients who were severely affected by these drugs. One grain of quinine has produced a severe skin eruption in one case, and a violent diarrhoea in another. Two-grain doses of pot iodide thrice daily produced after two days a severe

bullous eruption in one of my Hospital Assistants. In addition to this eruption which was very severe on the face and arms, he had purpuric patches on the back, metallic taste in the mouth and hæmorrhage from the bowels, with a rise of temperature. The symptoms were so severe that life was despaired of. The urine was half albumen. The patient was gouty and the kidneys were inactive, so that the pot iodide was not being excreted as in health. The irritation to the skin and intestinal mucous membrane caused by the drug resulted in the bullous eruptions and hæmorrhages in the skin and from the intestines. Quinine apparently may have the same effect. This emphasises the necessity of carefully examining the urine, and I would suggest that the quinine elimination test should be applied in the examination of the urine in all cases in which the drug is being given to patients who have suffered severely from malarial intoxication and show indications of hepatic torpidity or albumen in the urine.

The points I have endeavoured to bring out in this somewhat lengthy contribution are—

- (1) The occurrence of black-water fever in certain districts in Burma.
- (2) The fact that in all these districts intense malaria may be encountered.
- (3) All these places are subject to great variations of temperature, and hence patients are exposed to "chill."
- (4) Quinine administered to a malarial patient with damaged kidneys may provoke an attack of black-water fever.
- (5) Intestinal hæmorrhage may occur as a complication of malarial intoxication.
- (6) The urine and probably also the *feces*, should be carefully examined in all cases of chronic malarial fever before quinine is administered and during its administration.

THE DISPOSAL OF SEWAGE IN CANTONMENTS

By A. W. COOK YOUNG, M.B., D.P.H. (ABER.), D.T.M. & H. (CAMB.),

CAPTAIN, I.M.S.

THERE is no doubt that the most important point one has to consider in the health of cantonments in India is the disposal of night-soil, and there is also no doubt that the methods at present generally in vogue are as a rule most unsatisfactory. There seems a tendency that in this matter we should leave well alone. We have trenches, they are all right. What is there to worry about? I hold, that, however well managed those trenches are—and it is a very doubtful point if they are really ever well managed—this system is most unsatisfactory and open to numerous objections. The sewage has to be carted along the roads to the trenches, and until the carts take the night-soil away daily, it has to be accumulated in receptacles,

which are nothing more or less than disease traps. While I was acting Cantonment Medical Officer in a large cantonment last cold weather, I found in more than one case, these receptacles old and broken up, the sewage might as well have been thrown down on the road side waiting for the daily (or nightly) round of the Crowley cart to take it away.

Admitting for the moment that the trenching grounds are well kept on Colonel Thornhill's system. There are cantonments where to trench the night-soil is, to say the least of it, a fauce, and Dehria Dun is one of those cantonments. The trenching grounds here yield no crops, no return of any sort is got from them. Unless the *khud* sides are utilized in time, no ground for trenching will be available, and, moreover, in the heavy rains experienced on these hill sides, the ground where these trenches are, becomes a horrible and filthy swamp. It was, therefore, with great interest I read Surgeon-General Hamilton's letter re small incinerators in the *Indian Medical Gazette* of last April, as I was then actually engaged in having a small incinerator constructed, as an experiment, as I had had no previous practical experience of them for the hospital latines, etc., of the 1st and 2nd Batts, 2nd K E O Gukhas.

When I arrived in Dehria Dun last March I soon came to the conclusion that here of all places incineration was the means of disposal of night-soil, as I remembered having last June seen in the R A M C Journal an interesting article on this by Lt-Col Haines, R A M C, and last month I have read with great interest his account of small incinerators in the *Indian Medical Gazette*.

Here I found the dry-earth system in use in the latines in the lines. The "dry" earth moreover was as often *wet*.

I at once took steps to stop the dry-earth system and now in each latine pan I have a few drops of crude kerosine oil kept and replenished each time the pan is emptied. As there are an extraordinary number of pine trees here, I wanted a handful of these pine needles (crushed) and placed in each pan also, but I regret to say this cannot be done as there is no labour (rather funds) available to collect the needles. Enteric fever is of common occurrence here among Gukhas and Europeans. There have been several cases of Kala Azar diagnosed lately in Dehria Dun. This disease is undoubtedly more common here than is suspected, and I have also found tubercle is rife among Gukhas both in the 2nd and 9th Regiments here. In a cantonment which is on the increase as Dehria Dun is where we have such more or less endemic diseases as the three cited above, one surely ought to avoid having ironclads travelling about the roads with their germs, when all things considered there is a much more efficient and most decidedly cheaper method of disposal of sewage in incineration,

and with the hope that ultimately incinerators will be introduced here after Surgeon-General Hamilton's plan, viz, one small one to each set of latines. I built one in my hospital compound. The working of this incinerator is much as described by Lieut-Colonel Haines, R A M C, in his article in the June number of the *Indian Medical Gazette*. I had it built by the Military Works Department a few yards away from the latines. The total cost was Rs 28-3-7 and it was estimated it would dispose of the night-soil of 80 individuals. I now find it is large enough to dispose of that of 150 individuals daily, and I believe I could now get one constructed of the same size for about Rs 20. It is built of 2nd class bricks, is 2½ feet square 4½ feet high. The fire chamber below is 2 feet high, the filth chamber above 2½ feet high, between the 2 is a grating of parallel iron bars each ½ inch thick and ¼ inch apart, which, I think, is the right distance to prevent unburnt matter falling through. The top is flat, consisting of an iron door, hinged on to the brick work, and the filth chamber is charged by lifting up this door. There is an iron chimney 1½ ft high, 6" dia, in the middle of this iron 'door' a layer of rubbish, fallen leaves, sweepings, etc., is placed on the bars, the nightsoil emptied straight from each *gumlah* on to this. Each *gumlah* in the latrine has a few drops of crude kerosine oil and a handful of crushed pine needles in it. I have collected a large store of these to last all through the rains. The urine and liquid excreta decanted off the solids is boiled in old kerosine oil tins in the upper filth chamber and this being divided by a sheet of iron into two compartments, one half for the solids the other half big enough to hold two tins resting on the iron bars—as this liquid boils it is removed, and used up in the garden. My fuel consists of fallen leaves, scrub, etc., and large quantities of scrub can be obtained free from the lines of the 2nd Gukhas and my Kahais bring in loads of it daily. I am storing a large quantity for use in the rains. The incinerator has been working now since the middle of April and most successfully. No sewage of any sort has left my hospital compound since then, and not a penny of expense, except the actual building of the incinerator has been incurred. It will, however, be necessary, I expect, in the rains to have some extra fuel, but as I have a lot of scrub stored, it won't be much and at the outside won't cost more than 10 or 12 rupees per mensem, as once a fire is started below, it keeps up for a long time and a great deal of heat is generated and the night-soil slowly but surely incinerated. There is a small arch at one side of the lower chamber for feeding and lighting the fire. There has no smell ever been noticed near the place, and though occasionally there is a good deal of smoke, I particularly noticed it was not in the smallest degree offensive. For the rains I have had built over the incinerator an iron

shelter which will prevent water getting on to the non roof and working in between it and the brick work into the filth chamber

The working of these incinerators is simplicity itself and most efficient. I believe it is the only satisfactory method for disposal of sewage of cantonments, if one considers all the methods more or less applicable to India. The Septic Tank it is true, if properly worked, is the ideal means of disposal of sewage, but it can never be worked satisfactorily in an Indian cantonment. It is most expensive, for one thing and, after all is said and done, there is the effluent to deal with.

The method of disposal of sewage we want in cantonments is a cheap and efficient method. This cheapness and efficiency is found in incinerators. Not one large incinerator for each cantonment, but small ones arranged conveniently in touch with groups of latrines and at any rate in regimental lines. This can always be easily managed.

CATARRHAL JAUNDICE

By N S WELLS,

CAPTAIN, I M S,

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A BRIEF reference to the pathology of this disease is necessary. The following notes are extracted from Osler's *Medicine*. "There is catarrh of the bile ducts as an extension of a similar process in the stomach and duodenum. The mucous membrane is swollen and a plug of inspissated mucus fills the diverticulum of Vater and the narrower portion just at the orifice, completely obstructing the outflow of bile. It is not known how far the process extends into the bile ducts." In the only instance he examined a case *post-mortem*, the orifice was plugged with inspissated mucus, the common and hepatic ducts were slightly distended and contained bile tinged mucus. There were no observable changes in the mucosa of the ducts. The concluding lines are of considerable importance with reference to treatment.

The diet generally recommended in treatment is milk, as being the simplest and plainest, preferably given with some mineral water or a solution of Sodium Bicarbonate, and the quantity should be limited to give functional rest to the inflamed stomach and duodenum.

Yeo* in his masterly summary of the treatment adds "The warm alkaline drink soothes the stomach, dissolves mucus and promotes the secretion of a thin highly blue fluid. If the patient is not satisfied with the diet, milk, we may give in addition some thin peptonised cocoa and milk, or peptonised gruel made with finely ground oatmeal or thin arrowroot or occasionally a little consommé

thickened with sago or tapioca." I need offer no apology for the above extracts since the choice of a diet is most important in the treatments, and I wish to draw attention to some fallacies. Milk is no easier digested than some of the other articles mentioned, and, in addition to this, it is particularly unsuitable in this disease because of the amount of fat it contains. The fat is not absorbed, and is decomposed by bacteria. The decomposition products set up irritation which tends to prolong the disease.

The rôle of bile in digestion is obscure, but it appears to possess three important functions: (a) the emulsification of fat, (b) a solvent for fatty acids though the intestinal fluid has a higher solvent action, this solution of fatty acids is supposed to be necessary for their passage through all membranes,* (c) Intestinal antiseptic.

The mechanism of fat absorption has not yet been completely solved. It has long been held that bile contributes in some special way. A study of the following facts indicates that it is a most important factor. In certain persons when milk is added to the diet there is flatulence and a tendency to diarrhoea with pale stools, less frequently there is constipation when the stools are more of the normal colour, the flatulence is due to the gases evolved in the decomposition of fat, *viz*, hydrogen and carbon dioxide. The frequent passage of soft stools is due to the irritation from the fatty acids and other decomposition products, their pale colour appears to be due to the presence of fatty acids and fat in excess. The most satisfactory explanation is that there is diminished absorption of fat and that the excess undergoes decomposition. A small dose of Podophyllin or Calomel gr $\frac{1}{2}$ — $\frac{1}{4}$ at night will prevent the symptoms which generally reappear if the drug is not continued. A tolerance for milk, if I may so call it, can be established by giving the drug for a few nights. The symptoms may reappear at any time after tolerance has been produced only to disappear again on a fresh exhibition of either drug. We need not here discuss how calomel increases the flow of bile. In such cases there is often evidence of functional deficiency of liver while the gastric and intestinal digestion appear to be normal in other respects. The symptoms I have outlined may not always appear in susceptible persons, but when they do, the stoppage of milk or the treatment indicated is always efficient. It used to be taught that bile contains no ferments, while of late it has been shown that Lipase is found widely distributed in the body† and amongst others in the stomach and its secretion, in the pancreas and its secretion, in the liver and the intestine. It is not clear what organ is the source of this ubiquitous ferment and what aid it requires, it

* *Clinical Therapeutics*

* *Problems in Animal Metabolism* — Leuthes
† *Leuthes*

any, to bring about the absorption of fat, but the above facts indicate that bile is a powerful factor.

If milk is given in catarrhal jaundice with complete obstruction, these symptoms are very largely exaggerated. On a diet of peptonised milk only one may see the patient pass strongly acid smelling and effervescing stools. In such cases the action of salines may seem to be indefinite and there is a surprising quantity of feces evacuated. I have already offered an explanation for these symptoms. I have seen a speedy improvement to set in and an immediate and remarkable amelioration of the above symptoms in a protracted case, by a change of diet from milk while the other treatment was unchanged. I have reason to believe that decomposition products arising from a milk diet irritate the intestines considerably and prolong the disease.

Functional rest of the stomach and duodenum is most important, and at the outset is capable of itself to abort an attack of catarrhal jaundice. By functional rest I do not mean the giving of small quantities of a simple food. It must be a complete one, and all food should be withheld for 24 or at least 12 hours. In a severe case, in which this necessity is greatest, the patient has little or no appetite, and he can get along quite comfortably with alkaline drinks and water or barley water, provided he is strictly confined to bed. The value of this is so well known in the treatment of the gastric diseases of children and in the various forms of gastritis in adults that I need not enlarge on the subject. If our view of the pathology of catarrhal jaundice is correct, our energies should be directed towards the reduction of the turgescence of the mucous membrane, to stop the secretion of mucus and to dissolve out what has already been formed. There is no such efficient means of meeting these indications than complete functional rest and the giving of a warm weak alkaline drink. It will often be very difficult to carry out a rest of 24 hours. The blocking of the bile ducts is a comparatively slow process, and its completeness depends on how long the secretion of mucus goes on. Even if the case comes under observation at a later stage, I strongly recommend this treatment, although the indications are not so urgent and the benefits derived are correspondingly less. I shall proceed to give the notes of some illustrative cases.

Case I—The patient felt ill and sick and passed several pale coloured stools during the day. The feeling of malaise and nausea increased towards the evening, but he indulged in some exercise, and suffering from intense thirst, drank some aerated waters freely. By night the nausea was so intense that he retired to bed without food after drinking some water. There was a feeling of distension and discomfort in the stomach, and splashing sounds were heard

whenever he moved. Later there was sudden and violent vomiting of a large quantity of a clear, colourless and tasteless fluid. He felt easier and fell asleep. The next day he felt quite fit and the stools were normal. I have no doubt that in this case the functional rest unintentionally given, aborted an attack of catarrhal jaundice. It was perhaps aided by the vomiting, to which I am not inclined to attach much importance. It may be argued that this was not an early stage of catarrhal jaundice, and, unfortunately, I failed to test the urine for bile, but the nature of the stools proves that there was some obstruction to the flow of bile.

An attack of catarrhal jaundice is generally very insidious, the early symptoms being malaise, nausea, the passage of clay coloured stools, there may be a temperature and signs of gastritis. The pigmentation of the conjunctiva and skin follows later. The initial symptoms may be very trivial.

Case II—A patient who was in the habit of taking milk and had been suffering for two days from the symptoms of deficiency of fat absorption, contracted a chill after a long drive on a cold wet day. Later in the day, the breakfast, eaten before the drive, was vomited and a light dinner also met the same fate. The following morning the patient complained of intense nausea and some flatulence, and there was a slight diarrhoea with paler coloured stools. A cup of tea drunk in the early morning was vomited. There was no jaundice. I looked upon this case as an early stage of catarrhal jaundice and prescribed functional rest and soda mint tablets to be taken with some water, an alkaline drink being refused because of the nausea. Small doses of a saline were given as the stomach became settled, and at night calomel gr $\frac{1}{4}$ with hyoscyamus gr 3 was given to reinforce the saline. In the evening hunger was very distressing, so a light meal of dry toast and a plain mutton mince was permitted. It was the only alternative to milk available at the time. The meal was retained, but there was slight nausea. The next day the conjunctiva was distinctly jaundiced, the flatulence and nausea were considerably less. There was constipation, and the stools were slightly tinged with bile. The saline was continued for a few days, and the patient was restricted to a fat free diet in limited quantities. The conjunctiva gradually cleared up, and there was slight constipation for a few days. The last symptom is worthy of note. This case marks a further stage in the development of catarrhal jaundice, but fortunately there was still time by prompt treatment to prevent a more permanent blocking of the bile ducts.

Case III—This case is an example of a later stage than reached by case II. I shall briefly allude to it and bring out the essential features. I was called in consultation to see a young Eurasian girl suffering from persistent vomiting

The history given was rather indefinite. The mother stated that the girl had not been well for a couple of days and was off her feed, but had eaten sparingly of the usual food, and fruits were freely indulged in. The bowels had not moved on the day I saw her, but on the previous day she had passed a very pale stool. The child was running about until the morning of the day I was called in when she was confined to bed from a feeling of illness, every bit of food and drink taken on this day was vomited up, several broths and invalid foods were tried. No milk had been drunk during the illness, the Hospital Assistant in attendance was treating her for "liver." When I saw her, the child had no temperature, there was a remarkable absence of flatulence, the liver was not enlarged, the conjunctiva appeared to be very faintly jaundiced, but it was not definite. She was given a little water to drink which was promptly vomited containing plenty of mucus. I prescribed functional rest and an immediate dose of calomel grs. in without water and a warm enema, dessertspoonful doses of a weak soda solution every hour were also ordered with instructions to increase the amount as the stomach became less irritable. Salines were not given at once for obvious reasons, and a fat free diet was ordered to be begun the next day. Unfortunately I could not see the case again, but I heard two days later that the gastric symptoms had subsided by the evening, and the child was profoundly jaundiced the next day. Further progress was uneventful. Here the catarrhal process had gone on for over two days, and it was being increased by injudicious feeding. Even on the third day when the stomach was very irritable, various foods were being tried with small doses of Hydrocyanic acid. The obstruction of the bile duct had gone too far to abort the attack by prompt measures.

These cases occurred at considerable intervals. I have put them in this order as they seem to me to illustrate how a case of catarrhal jaundice may be produced and how it may be aborted by prompt treatment. A persistent obstruction of the bile duct is formed slowly and is the result of a continued catarrhal inflammation of the stomach and duodenum. Injudicious management may thus prolong a moderately severe catarrh till there is obstruction, while a severe catarrh may subside without it as it is more likely to come under treatment at an early stage. It is quite conceivable that if we can cut short the catarrhal process at the commencement that we not only diminish the mucus available for the blocking of the bile duct, but that the mucus plug, if already formed, shrinks as it condenses and thus leaves a channel for the passage of bile.

To sum up then, the first indication is complete functional rest for 24 hours or at least 12 hours. I would recommend peptonized gruel made

with finely ground oatmeal, clear soup and soft boiled rice and dry toast. Consommé thickened with tapioca or sago, thin arrowroot with a little skimmed milk, if prepared in this way. If it is desired to give milk, it should first be thoroughly skimmed and peptonized in the early stage.

The quantity should be strictly limited at first. It should be remembered that there is probably also an obstruction to the flow of pancreatic juice, therefore only peptonized food should be given in the beginning. Once convalescence is established, we may rapidly increase the diet under supervision, but it is well to bear in mind that fats are not well tolerated until the bile is flowing freely. The above list gives us a fairly wide choice of diet. Under this regimen there will be considerably less flatulence and irritation of the intestine, and convalescence is more likely to be established sooner.

I shall conclude with some brief remarks on the other means of treatment.

Rest in bed—This is essential in the early treatment. It enables the patient to bear in comparative comfort the complete starvation and low diet. He should be kept warm to avoid the risk of fresh chills.

Drugs—All are agreed in the use of warm alkaline drinks, a mineral water or a solution of sod bicarb., to dissolve out the mucus, and saline purgatives to remove intestinal contents and waste products from the blood. Osler's recommendation* to avoid severe purging is important. The patient should be encouraged to drink freely as bile is excreted in the urine. A dose of calomel in the beginning and occasionally afterwards is also generally recommended.

In addition to this treatment, some recommend the use of some chologogue as podophyllin to promote the flow of bile to expel the mucus plug by a *vis a tergo*, Yeo† does not recommend pushing this too far. In this disease bile is not dammed up in the bile ducts, but is freely absorbed into the blood, and if any extra bile is secreted by this treatment, it is rapidly absorbed.

The application over the upper part of the abdomen of a linseed and mustard poultice† as Yeo recommends or equal quantities of mustard and starch is better than hot fomentations. It is more comfortable for the patient, and there is no risk of chills.

Warm enemas are indicated when there is constipation, but cold enemas are rightly looked upon with scepticism.

Yeo† remarks that some recommend an emetic at the commencement in the hope of increasing the pressure in the bile ducts sufficiently to expel the mucus. I do not think that there are any grounds for this belief. The enforced functional rest of the stomach, which would be necessary under this treatment, probably accounts for any good results. It may be needed to empty the stomach of its contents.

* Osler's Medicine

† Clinical Therapeutics

A Mirror of Hospital Practice.

NOTES ON 103 GYNÆCOLOGICAL ABDOMINAL SECTIONS

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THE 103 cases referred to in this article comprise the gynæcological abdominal operations I have performed at the Lady Curzon Hospital, Bangalore, since August 1901. From them some idea may be formed of the class of cases coming for treatment to an Indian women's hospital, though they give a very erroneous impression of the actual number of such cases admitted. The population of the city and station of Bangalore is not much below 180,000, and the population of the surrounding country from which cases come to hospital for treatment is roughly 5,400,000, and it might reasonably be assumed that gynæcological diseases must be rare among the women, if such a population provides only an average of about 20 laparotomies per year in a hospital of 110 beds. I do not think that this is the case, indeed, I am strongly of opinion that in the large towns at any rate, pelvic disease is more common among women in India than in Europe. To go to hospital, however, is too frequently the last resource of the native of India, and when there his attitude is often one of suspicion and dread of the measures which may be adopted in his case. This frame of mind induces him to give misleading statements as to his symptoms and the history of his case, and not seldom to absolutely refuse the operation which alone can put him right. He asks for 'medicine', and, when two or three days have passed without obvious benefit, and without any assurance from the doctor that medicine will cure him, he betakes himself to his native *vaidhyān* or *hakīm*, who will comfort him with assurances of his cure, so long as his fees are paid.

The women of India are no better than their lords in this respect, and even when a woman is willing and anxious to be rid of the tumour or constant pain which makes life a burden, her husband will be found unwilling to do without a housekeeper for the time necessary for her convalescence. Roughly, the cases consenting to operation are about one-third of those seeking treatment at hospital and needing it, and the number of cases admitted to Indian hospitals must form but a small proportion of those who, afraid to apply for treatment, continue to suffer or remain in the hands of native quacks.

In this connection I was much impressed by the remarks of Major R. H. Elliot, I M S, (1) writing on the subject of native catarrh of the couched. He says—

"It is hard for those who have not lived and worked amongst them to realize how easily the rascal falls a

dupe to impudent self advertisement. He is a simple, kindly person, whose implicit trust in confident self assertion will bring him to grief for many another generation. The vision of these poor unfortunate people sitting down in a dusty bazaar to let an ignorant charlatan thrust a dirty needle into their blind eyes has evoked the indignation of the English Surgeon from the time of our first occupation of the country. Side by side with a well equipped English hospital, which turns out its ninety odd per cent of successes, there sits in the neighbouring bazaar, even to day, the charlatan whose fee is fixed at anything from 3d to 8 shillings, plus, in every case, a fowl or other animal. The latter is ostensibly for sacrificial purposes, but I understand ends uniformly in the *vaidhyān's* curry pot. Weirdest, perhaps, of all the *vaidhyān's* methods is the use of the saffron coloured rag, with which pus is wiped away from the patient's inflamed eye. On this colour the pus, etc., cannot be seen, and therefore all is well. It is the fabled ostrich again, only this time in real life and with vital interests at stake."

No truer words were ever written, but they do not apply to eye surgery only. The trusting native of India will for many years to come be the victim of unprincipled self-assertion and crass ignorance, and not the least dangerous of those who gain by his credulity are those *vaidhyāns* and *hakīms*. I often think, did the ethics of western medicine permit it, that much good would accrue from systematically tom-tomming the bazaars concerning the benefits to be derived at the English hospital, or from a leaflet eulogising the skill and virtue of the Civil Surgeon!

But in spite of these difficulties and drawbacks much good work comes our way in India, and if we are not allowed to relieve or cure by operation every case whose condition cries for such relief, we may philosophically reflect that more time is given us for the study of the consenting cases while in hospital. I say "while in hospital" advisedly, for it is exceptional to hear of native cases again when once they have left. Lost in the huge whirlpool of Indian bazaar life, it is usually impossible to trace them either by name or address, and they are seen again only when they return with some other trouble.

These 103 cases do not represent all the abdominal sections performed during the period mentioned. I have confined this report to gynæcological laparotomies only, and so have excluded operations for appendicitis, diseases of the stomach, hydatid and other disease of the liver, hernia, and diseases of the kidney and spleen. I have also excluded all exploratory laparotomies, in which no operation was performed, and operations on the intestines for obstruction or disease.

The pelvic diseases treated by operation were—

1 Pyosalpinx	22 cases with 2 deaths
2 Ovarian and Parovarian cysts and dermoid cysts of the ovary	20 " " 2 "
3 Prolapsus uteri	19 " " 0 "
4 Retroflexion of uterus	11 " " 0 "

Carried over 72 " " 4 "

Brought forward	72 cases with 4 deaths			
6 Extra uterine gestation	9	"	"	0
6 Hydrosalpinx	5	"	"	0
7 Uterine fibroids	3	"	"	1
8 Hemotosalpinx	2	"	"	0
9 Carcinoma uteri	2	"	"	1
10 Ovarian abscess	2	"	"	0
11 Contracted pelvis	2	"	"	1
12 Pelvic tuberculosis	2	"	"	0
13 Salpingitis	1	"	"	0
14 Hematocele	1	"	"	0
15 Wound of gravid uterus	1	"	"	0
16 Pelvic hydatids	1	"	"	0
Total	103	"	"	7

Besides the above diseases, for which operative treatment was primarily planned, the following additional pathological conditions, necessitating alteration or amplification of the original procedure, were found during operation: salpingitis in two cases (Nos 3 and 43), cystic ovaries in 5 cases (Nos 3, 5, 10, 21 and 75), ovarian abscess in 7 instances (Nos 5, 11, 16, 29, 37, 79 and 87), ovariitis, 1 case (No 6), retroflexion of the uterus 4 times (Nos 17, 22, 36 and 80), pyosalpinx in 2 cases (Nos 32 and 42), prolapse of uterus in 3 cases (Nos 26, 28 and 44), pelvic abscess in 1 case (No 79), parametric abscess in 1 case (No 85), and adherent vermiformis in 7 cases (Nos 28, 37, 49, 79, 82, 84 and 100). Adhesions, more or less dense, were found in 41 out of 70 cases of pelvic disease, as might be expected where so many cases seek hospital relief as a last resource. They were present also in 4 out of the 30 cases operated on for uterine displacements. Adhesions are noted to have been dealt with between diseased or displaced organs or new growths, and the following tissues or organs, placed in the order of frequency of occurrence: Broad ligament, rectum, omentum, uterus, pelvic peritoneum, small intestine, vermiform appendix, sigmoid colon or caecum, parietal peritoneum, bladder, liver, stomach, transverse colon and mesocolon.

The adhesions to the vermiform appendix are of interest in view of the researches on the connection of disease of the appendix with pelvic disease by Kelly, Hawkins, Lockwood, Duhossens, Hunter Robb and others, recently collected and analysed in a valuable paper by Arnold Lea (2). It would be quite beyond the scope of this paper to do more than refer shortly to this condition, and to state that I found the appendix involved in 7 out of 70 cases of pelvic disease, and that, in 6 of them, I removed it. In one case (No 92) adhesion of a right pyosalpinx to the caecum had taken place, the appendix being free and apparently normal. In cases 79 and 89 adhesion of the appendix was found in conjunction with left tubal disease. The pelvic diseases with which it was found involved were pyosalpinx (4 cases), parovarian cyst, extra uterine gestation, and pelvic hydatids (3). I am of opinion that it is advisable to remove it in every case of pelvic disease in which it is found adherent, and to examine it in every case of

abdominal section for pelvic trouble, even if it is confined to the left side.

The pelvic diseases enumerated above give a very good idea of the percentage of each class occurring among the women of a large Indian town. Pyosalpinx and other diseases of the fallopian tubes, with the sequelae of such disorders, tubal gestation and ovarian and pelvic abscess, easily head the list. This is not extraordinary where gonorrhoea is rife, and the barbarous and dirty practices of the bazaar midwife are still tolerated by the people. At her door, too, may be laid the blame for the numerous cases of prolapse and uterine displacement which we see often in quite young women. The seating of an unfortunate woman in labour on hot ashes to stimulate uterine contraction, and the vigorous butting and kneeling with the head, of the abdomen and uterus immediately after delivery of the child, while the patient stands against a wall till she swoons, are among this practitioner's armoury of remedies. They cannot fail, in my opinion, to seriously injure uterine ligaments already weakened and stretched by the woman's daily work while pregnant, which often includes the lifting, and carrying for distances, of heavy weights. Add to all this the resumption of her ordinary life immediately after her confinement, and we have a combination of factors quite sufficient to explain a high percentage of prolapse and retroflexion.

The small number of uterine fibroids is remarkable. I can find records of only 13 cases admitted to hospital during the period under report, 9 natives and 4 Eurasians. I gather from this that fibroid disease is not common among the natives of India. This remark, unfortunately, does not apply to cancer, though only two cases were operated on in five years. I find records of no less than 33 women with carcinoma uteri, who either refused operation or came to hospital too late. Of these 21 were natives and 12 Europeans or Eurasians. In four of these cases I opened and explored the pelvis, in the hope of being able to clear out the disease, but had to abandon the hope of doing any good. The majority of these women were victims of the native gift for procrastination and of its results. No 64 of this series is a good example, a woman who suffered for two years from occasional and for three months from continual hæmorrhage before she sought advice.

Of ovarian and parovarian diseases the following conditions were noted:—Multilocular cysts eleven times, cyst of corpus luteum once, parovarian graafian and dermoid cysts three times each. A dermoid locule occurred in cases 96 and 97 in connection with a graafian follicle and a multilocular cyst respectively. Adhesions were found in eight of the 20 cases, and in one case (No 63) the cyst was firmly adherent in the upper abdominal zone to the transverse colon, stomach and edge of the liver.

The operations performed for the relief of the diseases enumerated above were —

(a) Removal of uterine appendages	32	operations with 2 deaths
(b) Ovariectomy	20	" " 2 "
(c) Anterior fixation of uterus	17	" " 0 "
(d) Anterior suspension of uterus	12	" " 0 "
(e) Laparotomy for extra uterine gestation	9	" " 0 "
(f) Drainage of pelvis	3	" " 0 "
(g) Abdominal hysterectomy	3	" " 1 "
(h) Myomectomy	2	" " 1 "
(i) Cæsarian Section	2	" " 1 "
(j) Repair of sacro uterine ligaments (Stanmore Bishop)	1	" " 0 "
(k) Laparotomy for pelvic hydatids	1	" " 0 "
Operation for wound of gravid uterus	1	" " 0 "
	103	" " 7 "

As regards the operations for uterine displacements, I make a distinction between 'fixation' and 'suspension' of the uterus. The former operation I perform for complete prolapse and the latter for retroflexion. My procedure for my first six operations for prolapse was to fix the posterior wall of the fundus by silk sutures to the parietal peritoneum and subjacent fascia, which is the operation described by Kelly. Of these cases I know of one in which the prolapse has occurred, though not completely. I then abandoned the silk sutures for kangaroo tendon and fixed the anterior surface of the fundus to the peritoneum and muscle. I chose kangaroo tendon as it is more easily sterilized than silk, and is less likely to cut through the uterine substance. The operation I now perform, and which I have done in every case of prolapse in this list since No. 84, is the fixation of the anterior surface of the body of the uterus by two, three or four kangaroo tendon sutures, directly to the muscles without any intervening peritoneum. For retroflexion I still practise Kelly's (4) operation of "suspension," though I use kangaroo tendon instead of silk. On one case (No. 41) I performed Stanmore Bishop's (5) operation for repair of the sacro-uterine ligaments. The result was most satisfactory. I have seen the patient several times since the operation, and the uterus is in excellent position. I have not continued to do the operation as I found the technical difficulties in its performance not inconsiderable.

The mortality of 7— or 6.8 per cent — is as low as one can reasonably expect considering the state in which many of the cases present themselves for treatment, their chances of recovery prejudiced by months or years of neglect, or, worse still, by a course of massage, blisters and the actual cautery at the hands of their native practitioner. The two deaths after operations for pyosalpinx were of this class, the pelvic adhesions being general and extremely tough, the patients having been incapacitated for too long before applying for treatment. This remark also applies to case 63, on ovarian cyst, which had been under native "treatment" for six months before coming to hospital. As the tumour completely filled the abdominal cavity,

the bazaar quacks must have commenced to chafe away the tumour when it was not much smaller. Their blisters and massage probably accounted for the very general adhesions I found. Case 70 was also very adherent, but was also septic, I regret that I did not drain it per vaginam. The case of cæsarian section which I lost, died from intestinal obstruction. At the *post-mortem* a coil of small intestine was found firmly adherent to the uterine wound, no doubt, attached to the silk knots as explained in Tate's (6) paper on similar occurrences after supra vaginal hysterectomy. In future I will invaginate the deep sutures with a continuous Lembert.

As regards technique, I employed a median incision varying in length from 1½ inch (for 'suspensions') to 10 inches (for case 63), in every case except No. 34, in which a cystic ovary was found in the sac of a ventral hernia. Adhesions were separated by the fingers, or, when very dense, by curved scissors after ligature. In case 49 the intestine was accidentally wounded while separating adhesions. It gave no further trouble after suture. In two cases, No. 33 and 103, the bladder was opened, in the former while separating it from the uterus, in the latter while opening the parietal peritoneum to which it was firmly adherent. Careful suture, followed by the wearing of a retention catheter for two days was carried out, and the accident caused no further trouble in either case. Drainage was employed in nine cases, Nos. 8, 43, 44, 49, 69, 79, 81, 100 and 103. Of these, two were drained per vaginam, a pyosalpinx and a case of pelvic hydatids. The remainder, including two cases of tubercular peritonitis, were drained through the abdominal wound, either by Keith's or soft rubber tubes. I employed irrigation only in cases of extra-uterine gestation to wash out clots, or when many adhesions had been separated and there was much blood in the pelvis. Up to case 37 I closed the abdominal wound by interrupted sutures of stout silkworm gut, perforating all the parietal structures, except the peritoneum (Greig-Smith) (7). Two hernias resulted, and I now close the abdominal wall in three layers, peritoneum, fascia and skin using continuous sutures. The buried sutures are of kangaroo tendon, and the skin suture of fine silkworm gut. I have entirely abandoned silk or catgut for buried sutures, having had several stitch abscesses (see cases 67 and 68). I have had no abscess attributable to kangaroo tendon, and I regard it as the perfect substance for buried stitches. When it is not available, I used the finest silkworm gut, with which I have had as good results. Both kangaroo tendon and silkworm gut are much more easily sterilized than either silk or catgut, the former only requiring storage in a 20 per cent alcoholic solution of carbolic acid, and the latter only boiling before use. The dressing I use is invariably sal-alembroth gauze wrung out of 1 in 2000 Hydro-

perchlor solution, covered with a thick pad of alembioth wool and fixed by a many-tailed flannel bandage

Iced water to sip, or ice to suck, and rectal feeding are started four hours after the operation. Feeding by mouth begins, in most cases, on the next day

As regards the sterilization of the hands and the patient's skin, the former are thoroughly scrubbed with mercurial or spirit soap and soaked in 1 in 1000 Hydio perchlor. The patient's skin is prepared overnight by treatment with soft soap, turpentine and ether, and finally covered with a mercurial gauze pad, which is removed at the operation, and the skin again thoroughly scrubbed with spirit soap. In some native cases, the overnight preparation of the skin has to be omitted to avoid frightening the patient. All sterilization, in such cases, is done by the operator just before the operation. I have not observed any ill results from this method

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[We regret we cannot find space for the tabular statement, as it runs to no less than 33 columns Ed, I M G]

A FIVE-DAY FEVER OF CALCUTTA

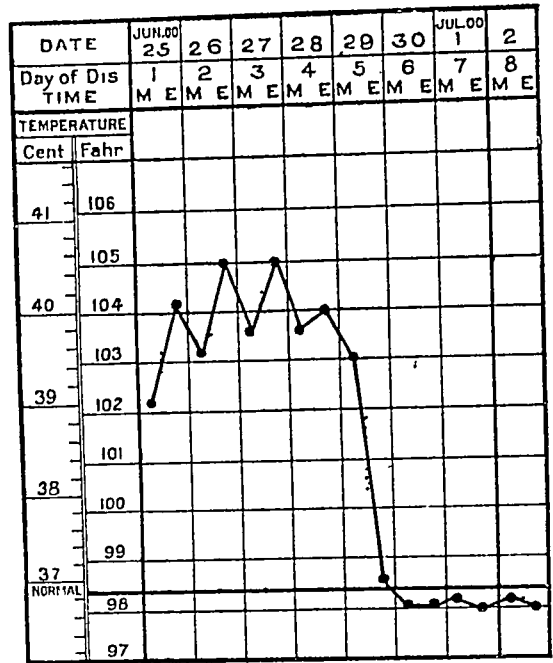
By U N BRAHMACHARI, M A, M D,

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In the year 1900, while working as house physician to Surgeon-General Bomford in the Medical College, Calcutta, I made observations of a number of cases of short remittent fever, which used almost invariably to terminate on the 5th day and were designated by Surgeon-General Bomford, as cases of "Five-day Fever." They constituted a clinical entity distinct from malaria, as we never found the presence of malarial parasites in their blood, the spleen was never enlarged and the fever used to terminate without administration of quinine, which, in those cases in which it was administered, seemed to have no influence upon the course of the illness. Some of the cases came from the same house, others occurred in places where there was no other case and one occurred in the wards of the Medical College Hospital itself. Most of the cases came into the Hospital

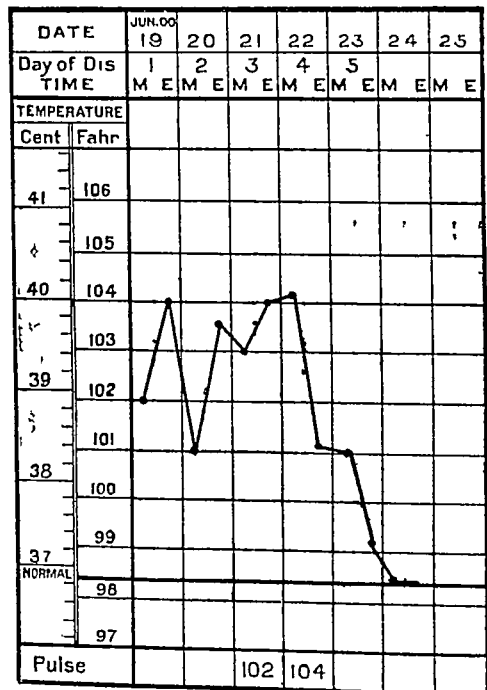
between the months of June and July, during which we observed many such cases. I append here the notes of six of these with temperature charts of three

1 Miss B, æt 10, admitted into Hospital on 25th June, 1900, fever without any ague fits, no cough, vomiting present, slight constipation, spleen and liver not enlarged, tongue, coated, headache, extreme, patient's sister also suffering from the same type of fever (Chart No I)



No I

2 Charles T, æt 26, admitted into Hospital on 7th May, 1900, contracted the fever while staying in the Calcutta Medical College Hospital,

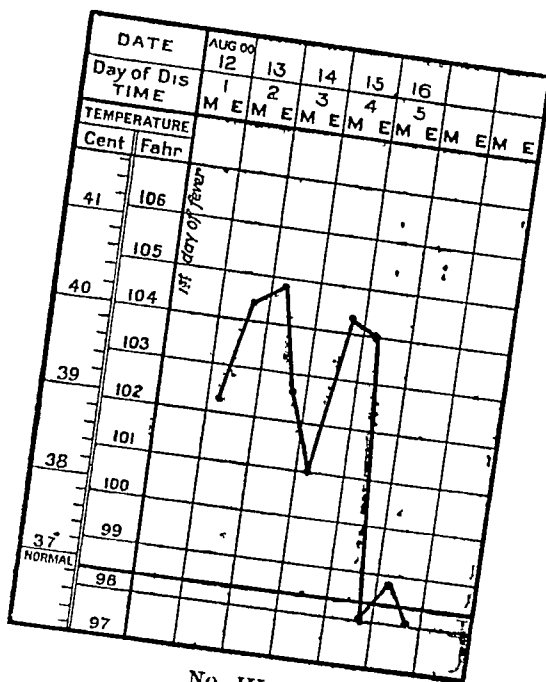


No II

[SEP 1, 1907]

where he was being treated for dysentery for more than a month. Fever without any shivering fits, spleen and liver, not enlarged, lungs, occasional ronchi audible at the bases, tongue, coated with a fur at the centre, diarrhoea present, pulse, 104 during the height of the fever.

3 Norman P., æt 17, a military student of the Medical College living in the Military students' barracks, admitted into Hospital on 12th August, 1900. Spleen, not enlarged, extreme headache, tongue, slightly coated, no diarrhoea, no of red corpuscles = 5,175,000 per cmm, leucocytes = 9,231, hæmoglobin = 95 per cent (Chart III).



No III

4 Miss R., æt 35, fever—coming on with a feeling of cold, no vomiting or diarrhoea, no cough, spleen, not enlarged, tongue, coated in the centre but no prominent papillæ, headache, extreme, slight occasional sickness, pulse, 120 during the height of the fever, duration of fever, 120 hours nearly.

5 Miss A., æt 10, admitted into Hospital on 5th July, 1900, fever without any shivering, no vomiting, no cough, spleen and liver, not enlarged, tongue, coated in the centre with prominent papillæ and red and raw at the edges, headache, extreme, pulse 128 per minute during the height of the fever. Patient's brother suffering from the same type of fever, fever terminated after 120 hours.

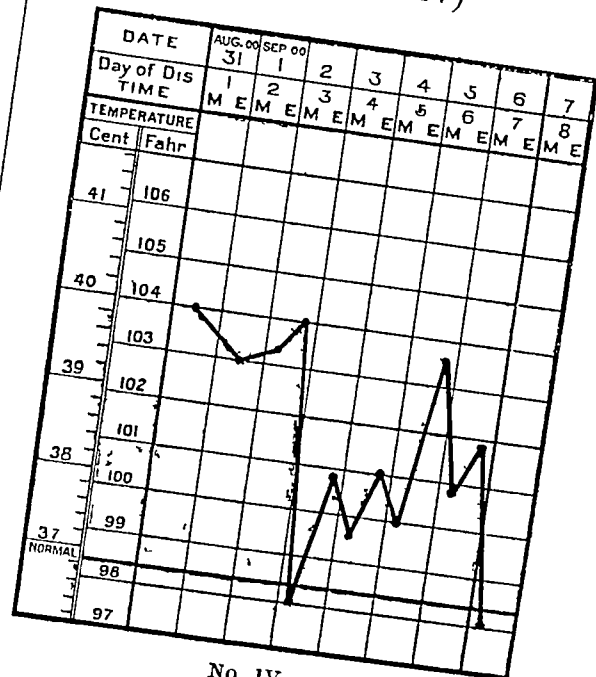
6 McK., æt 18, admitted into Hospital on 8th May, 1900, fever with shivering fits, extreme prostration on admission, slight vomiting and diarrhoea, spleen and liver, not enlarged, lungs, nothing abnormal, tongue, slightly red and coated in the middle and red at the edges, headache, extreme, pulse, 64 in the con-

valescent state. Duration of fever—5 days and 6 hours.

It is possible that this fever is similar to Major Rogers' "Seven-day fever", the slow pulse described by him in his cases was not, however, noticed in ours and the fever used to terminate on the 5th, instead of on the 7th day of illness.

I append here, however, the notes with temperature charts of 2 cases admitted in the same year into Surgeon-General Bowford's ward which bear a close resemblance to Major Rogers' cases of "Seven-day fever".

I Patient H N., admitted on 31st August, 1900, spleen, slightly enlarged. No malarial parasites in the blood (Chart IV).



No IV

II Patient, J K., admitted on 9th May 1900, no rigors, extreme headache, tongue, thickly coated in the middle, spleen and liver, not enlarged, lungs, nothing abnormal. Pulse, 56 per minute in the convalescent state. No malarial parasites in the blood. Temperature chart resembling Major Rogers' terminal cases.

Before concluding, I would point out that "Five-day" is not limited to the European and Eurasian population of Calcutta. I append the chart of a Bengali gentleman, recently treated by me, in whom the fever terminated exactly on the 5th day. During his illness he was extremely prostrate, pulse was very feeble; tongue was coated in the middle with prominent papillæ, the condition resembled that of enteric for the first two or three days of the illness.

Indian Medical Gazette.

SEPTEMBER, 1907

THE GOVERNMENT REGULATION OF MEDICAL FEES

THE following notification of the Government of India has been published, dated 1st July 1907. We could well wish that such a notification had never been considered necessary, and we would infinitely prefer the matter of fees to be left entirely as a matter of private arrangement between doctors and patients, in the same way as between lawyer and client, but if such an arrangement as has been in force for the past seven years is necessary, we are of opinion that the regulation in the form now published (which we give below) is in every way preferable. The matter of fees will now be left to the discretion of the sympathetic head of the Medical Department rather than communicated through lay channels, a method in many obvious ways objectionable. Medical men in the service of the Government of India should be grateful to the Director-General for having effected this change, and we hope the time is not far distant when any such order or regulation will be entirely abrogated, and all such arrangements left to the good feeling of both the parties concerned. The new regulation reads as follows —

"In supersession of the notifications of this Department No 437, dated the 25th July 1893, No 1930, dated the 8th October 1900, No 852, dated the 12th June 1901, and No 395, dated the 26th April 1904, and of all existing orders on the subject, the Governor-General in Council is pleased to make the following rule regarding the receipt by medical officers of Government of fees for professional services rendered to ruling chiefs and their families or dependants, Indian gentlemen of high position in a native state, or Indian gentlemen of high position in British India.

"2 A medical officer of Government, before demanding or accepting from any Indian gentleman of the status defined above any fee for professional services rendered, shall obtain, by a confidential application made through the local administrative medical officer, the permission of the Director-General, Indian Medical Service. Such permission will not be required in the case of fees calculated on the scale of

Rs 16 a visit or in certain cases Rs 32 according to recognized custom, unless the total amount thus paid for attendance on a patient or his family during any one month exceeds Rs 160."

Current Topics.

METABOLISM IN NATIVES OF INDIA

WE direct attention to the valuable paper published in this issue by Capt David McCay, F.R.S., the Professor of Physiology, Calcutta, and his Assistants. The subject of metabolism is one which has received too little attention in India and its relation to the dietaries of the peoples of India and especially to the dietaries in prisons, asylums, famine camps and hospitals makes such a study of vital importance. This paper should be read in connection with another paper by the same author recently published in the *Lancet*. The dietaries of jails and asylums have been framed in accordance with the known dietetic customs of the peoples of India, but the subject has not hitherto been studied in the light of modern scientific methods. We are strongly of opinion that there is not much wrong with the dietaries of prisoners in India and the continued improvement in the health of the inhabitants of these institutions for the past twenty years is a practical proof that there can be no serious or important defect in them, we are, however, of opinion that this important question (which affects all classes in India) is one for further observation and experiment, and now that we have in Capt McCay, an expert who has earnestly taken up this big question, we hope the Government of India will see their way to put him on special duty for the thorough scientific investigation of the dietaries of the peoples of India. A preliminary investigation such as we here publish is an insufficient basis for change, but is an indication that the matter needs further examination and research.

AMERICAN VIEWS ON CATARACT

THERE was a valuable and interesting discussion on Cataract Extraction at the section of Ophthalmology at the 58th Annual session of the American Medical Association in June 1907, which is fully reported in the *Journal A M A*, of 15th June, 1907. The first paper is by Dr E E Jack of Boston, who opens the discussion on the question—Is the case operable? He discusses the general health, heart, lungs (cough), the condition of the eyelids, and conjunctival sac, lachrymal duct, etc, and recommends bacteriological examination in infectious conjunctival cases. He considers the "problem of the immature cataract as far from solution as ever," and that "ripening operations have not proved popular,"

"intracapsular migration has not joined the majority as adherents," and "extraction in the capsule is too hazardous"

He next discusses the preparation of the patient with an amount of detail which will seem elaborate to the busy Civil Surgeon in India, he even goes so far as to recommend "a short drill in the needed movements," a proceeding which in many cases, it seems to us, would do more harm than good

As to the anæsthetic to be used He thinks little of Alpha eucain, Beta eucain and tropacocain "Alypin may prove valuable" Holocain has enjoyed a certain degree of popularity owing to its having no action on the pupil, the tension of the corneal epithelium, but he decides that cocain is the most generally useful He uses it in 2 per cent and 4 per cent solution—dropped into the eye two or three times at five minute intervals

The next paper is by Dr J E Weeks of New York, who gives a very interesting account of the history of cataract extraction, or rather of the incision The description of the various incisions is well and clearly illustrated in the article quoted, and numerous other modifications are described, twenty-four of them being illustrated The desirable features of the incision are (1) it must be large enough to permit the lens to escape easily, (2) the incision must be placed where the healing of the wound will be rapid, *eg*, the wound should not be in the clear cornea in the aged or feeble, (3) the incision should be placed so that the field of operation will not be too greatly interfered with by hæmorrhage, (4) the incision should not lie too close to the ciliary body "It would seem that the region of the Limbus is the most desirable location" In the opinion of the writer a desirable section is one located in the Limbus, including about two-fifths of the circumference of the cornea, directed upwards and terminating with a small conjunctival flap

Dr Weeks tells us that in the United States "operators prefer to stand behind the patient and use the right hand for the right eye and the left for the left eye," but we presume that this method is practically universal

On the question of puncture, counterpuncture and what in a discussion in these columns, some years ago, was called "involuntary iridectomy," Dr Weeks has much to say, but we cannot find space to reproduce it

On the question of the conjunctival flap the writer quotes Von Graefe's conclusions, and he himself considers the flap to be "of great value, especially in old individuals and in patients who are restless" He prefers a flap "from 25 to 35 mm wide and from one-half to two thirds of the length of the incision at its middle" The flap should be turned forward immediately after the incision and the bleeding controlled by use of adrenalin instilled before the operation is begun After extraction and reposition of the lens the

flap should be restored to its former position by means of a spatula A suture is seldom necessary

For many years an iridectomy at the time of the extraction was a recognized part of the operation, and many well-known surgeons performed it as a routine measure, and others did a preliminary iridectomy some weeks before the extraction Then came the work of Abadie, Panas, Schweiger and Knapp, who advocated the "simple operation" or extraction without iridectomy, and many operators largely adopted it within the last few years, says Dr Weeks, a reaction has set in, and it is said that glaucoma more frequently follows the "simple operation" Therefore, many surgeons have gone back to the "combined operation," and it is a well-recognized fact that the visual results by the one method are as good as the other Dr Weeks adds that it is permissible to do the "simple operation" in young and healthy subjects, but it is "risky, to say the least," to do the "simple operation" in very old individuals, with gouty or rheumatic diathesis, "whose blood-vessels are atheromatous, with increased intraocular tension, swollen lenses, and hypermature cataract, and chronic bronchial affections"

Chandler has recommended what he calls the "modified simple operation" he excises a piece of the iris near its insertion just after the lens has been removed The piece removed should be 1 mm in diameter Through the opening thus made the retained cortical lens substance is permitted to escape Chandler reports only 4 prolapses in 312 cases, whereas Dr Weeks tells us that the "average of prolapse in simple extraction by good operators is approximately 6 per cent"

The next paper in this symposium is by Dr L Webster Fox of Philadelphia He recognizes that each cataract case is a law unto itself, he seems to prefer using an iridectomy, and he says that it is preferable in the hands of the larger number of operators

Dr Webster Fox's article is largely historical and well illustrated, giving illustration of 20 different kinds of cystitomes used by various operators He prefers Jaeger's hook cystitome as the safest and most mechanically perfect, though this is not obvious from the illustration given of it He also gives illustrations of 4 kinds of capsular forceps On the question of the removal of cortical substance Webster Fox has much to say Its removal is imperative and Fox uses massage first and the Daviel curette second, and if this is not sufficient, he irrigates the anterior chamber and he finds McKeown's irrigation the "most practical and safest," but he is firmly convinced that "the fewer instruments placed in the anterior chamber the better" This leads him to discuss the question of the extraction of cataract within the capsule a subject on which operators in India have recently had much to say

According to Webster Fox, the first surgeons who succeeded by this method were Freytag (121), Janin, and Richter about the year 1773, Mohrenheim a little later, and Beer in 1799, advocated this method. Then followed Gioppi, Rosmini and others and later the brothers Alexander and Herman Pagenstecher, who published their work in 1877.

It is not to be inferred that the operations practiced by these operators were all the same, but they had all before them the principle of extracting the cataractous lens within its capsule, and Dr Webster Fox also describes his own method of doing the operation. He has done only about 50 cases and in the last ten he has followed the method suggested by Pagenstecher and Smith. He has found "considerable excitation of the iris, more or less pronounced irritability in healing, the eyeball remaining red, and there is also much distortion of the iris," he says "among the Anglo-Saxon race I am not in favour of this operation as a routine method."

Here, again, we see the old allusion to the imaginary tolerance of the Indian or Asiatic patient as compared with the European or American, which has never been seen by surgeons in India, but is freely used when it is found necessary to depreciate the results of surgery in India. Dr Webster Fox does not seem to realize that ten or even fifty operations is a very small experience on which to condemn an operation which its chief champion has done over 10,000 times. Dr Fox then discusses the question of loss of vitreous, and we may well agree with the dictum that it should be our aim to deliver the lens without any such loss. He goes on to say—

"To day the ophthalmic world is turning slowly to the Orient and watching with interest the work done by Major Henry Smith, F.R.S.,* in delivering the lens within the capsule. If one Surgeon can perform 2,616 extractions in one year, with the following results: Iritis, 0.3 per cent, escape of vitreous, 6.8 per cent, capsule bursting 8 per cent, capsule left behind, 4.28 per cent, first class results, 99.2 per cent, second class results, 0.3 per cent, failures, 0.34 per cent, it must make the Ophthalmic Surgeons of Europe and America hesitate to give their results drawn from the meagre field around them."

With this sensible remark we must close these extracts.

BULLETS HUMANE AND OTHERWISE

The *Military Surgeon* for May 1907 contains a rather discursive article translated from the German of Surgeon-General A. Koeting of the German Army.

The subject of bullets and bullet wounds is one which has cropped up during and after every war since 1870, and the notion of the "humane" bullet was invented some 15 years ago.

The most recent experiments have shown that the diminution of the calibre of a bullet carried with it a diminution of the seriousness of the wounds. In 1897, Surgeon-General Kikouzi, of the Japanese Army, conducted the experiments which resulted in the adoption of the Arisaka rifle of 6.5 mm, which was the one used in the recent war with Russia, and he was energetically attacked by the press in Japan, as it was considered that this bullet was useless for war, certainly the wounds were mild and resulted in large numbers of wounded men being very soon fit for work again.

In the Italian war in Erythrea in 1896, the enemy used Abyssinian and Remington rifles, and after the fatal day of Adowa no less than 80 per cent of the native wounded came to the Italian Surgeons, who had been made prisoners for treatment, and some thousands of the men so wounded recovered within 15 days. In our own Chitral expedition in 1895, the 7.7 Lee-Netford rifle had too little stopping power, whereas the enemy with the 12 mm rifle put out of action all our men who were hit. The same experience was noted in the war of insurrection in Cuba, while the Spaniards were always grievously wounded by the 12 mm Remingtons, the Spanish Mauser (7 mm) only put out of action those of the enemy who were hit in the head or heart. In our South African war we used the 7.7 mm Lee-Netford and the Boers then 7 mm Mauser, and the effects are known to have been often very mild in character.

The same is the experience of the recent Russo-Japanese war. The Russians carried then 7.62 mm rifle, and the Japanese used the 6.5 mm Arisaka rifles, though then reserves had the older, Murata rifle (8 mm). The bullets had a hard lead core with jackets of nickel copper and nickel-steel, respectively. The Japanese bullets had a slightly longer point. On both sides 85 per cent of the wounds were caused by rifle bullets and on both sides no less than 62 per cent were designated as "slight." Serious deformations were produced only in the case of bullets striking on ricochet. It often happened that a man was struck several times and frequently one bullet wounded several men, owing to the enormous penetrative force of the bullet. Nervous shock and pain at moment of being hit was not ordinarily noticeable. The wounded often remained lying down after being hit and afterwards marched considerable distances even after perforating wounds. The holes of entry and exit were small and indistinguishable. There was no sepsis, as foreign bodies, pieces of clothing, etc., were rarely drawn into the wound. The explosive effects in closed organs (head, heart, stomach), which was considerable in the Murata (8 mm) rifle was much less noticeable in the case of the Arisaka (6.5 mm) rifle.

* For a review of opinions on Smith's operation, see also Vol. III of *Practical Medicine Series*, eye, nose, &c. Series 1907, pp. 49 to 54. Sole Agents, G. Gillies & Co., Glasgow.

[SEPT, 1907]

Surgeon-General Korting says "the general humane effects of the 6.5 mm bullet is beyond question." This is shown especially in wounds of the trunk and head. Formerly not three recoveries per hundred could be counted on in perforations of the cranium, while in the Russian and Japanese, whole series of cases of recovery have been published, and even recoveries from bullet wounds of the heart have been recorded. Wounds of the lungs have been much less harmful, and as regards abdominal wounds in the Cuban war no less than 68 per cent of such died, whereas in Manchuria as high a rate as 70 per cent of recoveries have been reported, when the chances were not destroyed by undue transportation. In 1870, wounds of joints meant amputation—in the recent war such cases recovered with good movement of the joints, in fact, at first aid stations there was little or no operative work. In the Franco-Prussian war there were 4.5 per cent of amputations of limbs on the German side, and 15 per cent on the French side, whereas in the Japanese war there were only 0.3 per cent at first aid stations and only 0.5 per cent in the hospitals.

So much for the wounding effect of modern bullets, but the "military utility of a bullet" must be considered from its killing effect. Surgeon-General Korting gives figures, and calculates that on the Japanese side there was one killed or died from wounds to 38 hit, on the Russian side it works out at one dead to 306 wounded. Surgeon-General Korting sums up his interesting article in the following words—

"From what precedes I draw the following conclusions: A bullet which (1) necessitates many hits to put a man out of action, (2) permits a third of the wounded to re-enter the struggle within three or four weeks—cannot be considered as sufficient from the military point of view. (3) Modifications of the bullet so as to increase its efficiency cannot be approved from the medical point of view, in the interest of securing the certain rehabilitation of the wounded. (4) From the practical point of view, we may conclude that the 8 mm bullet of the German army should not be replaced by a smaller calibre."

PARAGONIMIASIS

The March (1907) issue of the *Philippine Journal of Science* contains a valuable article on paragonimiasis in the Philippine Islands. We confess at first sight not to have understood this word, but on looking at the article we remembered that under this new name was hidden the well known trematode *Distoma Westermani*, or *D. Rengeri*, the lung parasite of Japan and China, and that paragonimiasis was another term for endemic hæmoptysis.

Paragonimiasis, then, is a chronic general or local infection with a species of paragonimus, only one species of which *P. Westermani* is known to infect man.

Anatomically the disease is characterized "by the production of peculiar bluish slate-coloured necrotic cystic lesions with dense fibrous walls which contain a material resembling anchovy

sauce and usually, but not always, the eggs or adult paragonimus." The symptoms are "cough, hæmoptysis, pleuritic pains, diarrhoea and abdominal soreness." When located in the brain, the parasite has given rise to Jacksonian epilepsy. The parasite now called *P. Westermani* was discovered by Kerbert in 1878, in the lungs of a Bengal tiger. Renger in 1879 found the parasite in a native of Formosa, and Cobbold gave it the name *Distoma Rengeri*. In the early eighties Manson wrote much about the affection and proposed the names "parasitical or endemic hæmoptysis."

The present report gives details of 17 cases. The geographical distribution is described as confined to Japan, Korea, China, Formosa and the Philippines, but occasional cases have been discovered in Germany and Holland, Sumatra and the United States. Its absence (or non-discovery) in India is somewhat remarkable, and it is worth examining all cases of hæmoptysis, though such usually mean tuberculosis. It is common that most observers note its being more common in males than in the females. The parasite is also found in the tiger, cat, dog and hog.

The diagnosis is made by finding the eggs in the sputum, but examinations should be frequent and careful, and this is rendered easier by running a drop or two of a 0.1 per cent solution of dilute sulphuric acid under the cover glass.

The course of the disease is chronic, prognosis is bad, death usually takes place from intercurrent diseases or by complications, of which tuberculosis is one. Till the life cycle of the parasite is known, prophylaxis cannot be satisfactory. There is no specific treatment, antiseptic inhalations are used, and improvement has resulted under large doses of iodide of potash.

MEDICAL RESEARCH IN THE MALAY STATES

Dr H. FRASER, the recently appointed Director of the Institute for Medical Research in the Federated Malay States, has published a report which contains much of interest.

The following note on the ever-recurring question of rice and beri-beri is of general interest—

"The work done on this disease has been limited. Attention both in these States and in the Straits Settlements has been mainly directed to the rice theory which has been so strongly advocated by Dr Braddon. This theory holds that rice which has been prepared in the Bengal manner or by the modification of it in use at Penang and Singapore will not cause the disease. Rice which has not been so treated will produce the disease, provided that it contains the harmful agent. It is thus assumed that in Bengal rice or its modification as prepared in Penang and Singapore the injurious agent has either been rendered innocuous or removed. At various places attempts have been made to decide the accuracy of the theory, several investigators record results which support the theory, but in every case objections can be taken to their work, observations have also been made which, if correct, would prove that rice had nothing to do with beri-beri. A debilitated

condition of the coolies, such as could result from the consumption of inferior rice, might predispose to beri beri, on the other hand, cases have been recorded where the patients have consumed only the best qualities of rice. The theory is one which presents great difficulties in deciding its accuracy—for example, take 200 coolies who have not and never have had beri beri, let 100 be fed on Bengal or Penang parboiled rice and 100 be fed on ordinary rice for six months or more, then if no cases of beri beri occurred, the advocates of the rice theory would hold that the ordinary rice used did not happen to be contaminated with the exciting agent."

Dr Fraser, along with Mr S L Symonds, the Government Veterinary Surgeon, have made many investigations into the prevalence of that form of trypanosomiasis known now everywhere as Surra, and they have published an interim report on their investigations. Cases of Surra have recently been found in Negri Sembilan, Penang, Selangor and Perak, and the above writers believe the disease is on the increase. This form of trypanosomiasis is either unknown or unrecognized in Australia, but horses and ponies imported from Java and Sumatra are found affected, and the same is true of cattle from India and Siam. Dr Fraser and Mr Symonds report that they have proved that "two species of biting flies of the Genus *Tabanus*, which are common in the Malay States, can mechanically convey the disease from naturally infected cattle to horses, and the trypanosomes met with in cattle and in horses are indistinguishable." It is thought by Mr Pratt, the Entomologist, that two of the three species of tabanidæ found in these States are hitherto undescribed species.

The following note on the anti-opium plant is of interest—

"The Anti Opium Plant—*Combretum sundaicum*. Specimens of the plant, now being utilized in various parts of the Federated Malay States as an anti-opium specific, and aqueous extracts prepared from it, have been received from various sources and preliminary experiments carried out to ascertain its constitution. The extracts received have been found to vary considerably in the amount of soluble matter contained in them, from 0.1 to 0.7 per cent being found in different samples. This variation may be due to the use of plants of different stages of growth, containing variable quantities of extractive matter, or to the manner in which the plant is roasted and extracted, or to both causes.

The extract was found to be very astringent and the astringency is probably due entirely to tannin constituents, the presence of which is shown by the reaction of the solution with iron salts, which form a greenish black ink. Approximately 60 per cent of the soluble matter, consisting principally of the colouring matter and tannin, is precipitated by lead acetate, leaving a clear almost colourless extract.

The presence of tannin is also indicated by the reaction which takes place when a little of the extract is placed in contact with opium or chandu, a test which is adopted at one of the distributing depôts in Kuala Lumpur to ascertain whether the plant used is the correct one. The tannin, as would be expected, forms a whitish precipitate of insoluble tannates with the opium alkaloids, producing a milky appearance on shaking. Preliminary observations have not shown the presence of alkaloids, glucosides or other bitter principles in the extracts. The somewhat drastic treatment to which the plant is subjected in preparing the extract is extremely

likely to decompose many constituents which might originally be present in the plant."

THE EARLY DIAGNOSIS OF HEPATITIS

MAJOR LEONARD ROGERS, IMS, has a very useful article in the *Practitioner* (June 1907) on the early diagnosis and cure of the pre-suppurative stage of amœbic hepatitis, which deserves the attention of all medical men in India, the land especially of liver abscess.

Everyone knows that in the early stages of liver abscess the persistent fever has been usually treated, often by the patient himself, as malaria and dosed with quinine, and at that stage the correct diagnosis is a matter of admitted difficulty.

Leonard Rogers, in the course of a comprehensive investigation of some 13,000 cases of "fever," has come to recognize the early stages of acute hepatitis. He tells us that "this disease may frequently be recognized by the blood changes, when in a stage which admits of rapid cure, and so they may be prevented from drifting on into the much more serious suppurative stage as is now so commonly the case." Further, these cases constitute a definite class of fever, usually of a chronic intermittent type, sometimes with no very definite symptoms of hepatitis and rarely with any dysentery. They may be recognized, or at least strongly suspected by the presence of a moderate degree of leucocytosis, generally of the type which is common in amœbic abscess of the liver, namely, one in which the proportion of polynuclears is either normal, or only slightly in excess. Further, this kind of fever rapidly yields to large doses of ipecacuanha, in the absence of symptoms of dysentery or even of hepatitis and the formation of tropical abscess of the liver is thus prevented."

Rogers quotes fifteen cases, and he emphasises the importance of always trying the ipecacuanha treatment before operating, and even before the exploratory puncture with the aspirating cannula.

Rogers inclines to explain the repute of ipecacuanha in dysentery in some countries, e.g., in India, by saying that it is invaluable in amœbic dysentery and useless in dysenteries of bacterial origin. This is a nice distinction and, if true, may possibly explain the failure of ipecacuanha in the dysentery of some countries, but at present so little is known of the comparative prevalence of the two supposed forms of dysentery, amœbic and bacillary, that it does not do to be dogmatic. Some writers even are not yet convinced that the amœba is really the harmful protozoon it is represented. Rogers recommends the ipecacuanha in the method, now time-honoured in India, viz., 20 to 40 grains once or twice a day about twenty minutes after a dose of tincture of opium.

We commend this thoughtful paper to the attention of our readers.

THE CROWBAR CASE

THE recent death of Dr J M Harlow, of Woburn, Mass, U S A, recalls to a contemporary (*Boston Med and Surg Journal*, May 23rd) the history of this famous case of recovery after brain injury which is nowadays mentioned in nearly all surgical text-books. The case was first published in the above quoted Journal in November 1848 (p 389), and twenty years later in 1868 Dr Harlow published his final report.

As is well known, the story of the accident which caused such wide and varied comment at the time, and which for many years was received as an American "jain" is as follows.—A man, named Gage, was at work in blasting rocks when the iron crowbar or "tamping iron" was driven by the explosion through his head, destroying in its passage one eye and a large part of the frontal lobe. The man was treated by Dr J M Harlow (who only died in May 1907 at the age of 87), and on his recovery from the immediate effects of the accident he came to Boston and was under the care of the famous Surgeon H J Bigelow.

The extraordinary recovery is the more wonderful when we think how septic complications of the brain were avoided. We reproduce the following from Dr Harlow's report—

"This fungus first made its appearance on the 19th, six days after the injury, also large fungi pushing up rapidly from the wounded brain, and coming out at the opening in the top of the head. On the 27th, the swelling upon the forehead fluctuated. The exhalations from the mouth and head horribly fetid. Pulse 84. Comatose, but will answer in monosyllables when aroused. Will not take nourishment unless strongly urged. Calls for nothing. Surface and extremities incline to be cool. Discharge from the wound scanty, its exit being interfered with by the fungi. The friends and attendants are in hourly expectancy of his death, and have his coffin and clothes in readiness to remove his remains immediately to his native place in New Hampshire. One of the attendants implored me not to do anything more for him, as it would only prolong his sufferings—that if I would only keep away and let him alone, he would die. She said he appeared like 'water on the brain.' I said it is not water, but matter that is killing the man—so with a pair of curved scissors I cut off the fungi which were sprouting out from the top of the brain and filling the opening, and made free application of caustic to them. With a scalpel I laid open the integuments, between the opening and the roots of the nose, and immediately there were discharged eight ounces of ill conditioned pus, with blood, and excessively fetid. Tumefaction of left side of face increased. Globe of left eye very prominent."

There have been many wonderful cases of recovery from brain injury published since 1848, but none quite so wonderful as this famous case. As Dr Harlow said, quoting old Ambrose Paré "I dressed him, God healed him."

As is well known, the skull was obtained on the death of the patient Gage thirteen years after the injury and is now in the Boston Museum, and casts of it are in most Medical Museums throughout the world.

THE GUAIAECUM TEST FOR BLOOD

THE guaiacum test for blood, though well established, is known to be open to fallacy owing to the difficulty of getting really old turpentine or good hydrogen peroxide. Dr J W Holland of Philadelphia has (*Journal A M A*, June 8th, 1907) published the following method of using this test which is worth trying—

"The following modification is proposed: the oxidizing agent is sodium perborate as made by Schering from sodium dioxide and boric acid. It is better than sodium dioxide alone because it does not absorb water and carbon dioxide from the air and is, therefore, more stable. The sample I have used has been kept loosely boxed for a year and a half. Immersed in water, this yields hydrogen peroxide and oxygen as freely as when first obtained. Because of its compactness the tablet form is preferred.

METHOD

A solution is made of freshly broken pieces of guaiac resin by boiling them with alcohol in a test tube for a few minutes until the tincture is yellow. The suspected material, which may be a drop or two of blood or of bloody urine or of water in which a blood stained fabric has been steeped, is cautiously mixed with a drop or two of guaiac solution to make a milky mixture. This is brought in contact with a fragment of sodium perborate on a white plate.

If the proportion of blood is large, the white perborate turns blue in a few minutes and remains blue until the drying of the guaiac leaves a yellow residue which changes the blue to green. This blue green colour persists on and about the perborate and is well shown on the white background for at least a week. If the proportion of blood is small the white perborate takes on a pale blue hue which turns green as the guaiac dries. The next day a distinct green stain is left on the white plate. The test is simple and delicate, though it must necessarily be open to the fallacies that belong to the guaiac test in any form. A distinct reaction was obtained from a small five year old blood stain on linen."

In a good article in the *Journal of Hygiene* (April 1907, p 193) Dr J A Aikwright of the Lister Institute sums up the recent researches into the natural history of the diplococcus intracellularis meningitidis as follows—

(1) Gram negative cocci obtained from the cerebro spinal fluid are not always true meningococci, even in cases of meningitis.

(2) Slight differences between different races of meningococci occur, especially as regards their growth and activity in sugar media and on gelatin.

(3) The meningococcus is not easily killed by cold, therefore its rapid death in lumbar puncture fluid and post mortem material must be due to some other cause.

(4) The means by which the meningococcus is carried from the diseased to the healthy can hardly be such as to involve drying.

A medical officer, writing in the *R A M O Journal*, takes exception to the term "sanitary officer" as applied to the military medical officers of health, recently appointed to the various commands. He says he can understand a "sanitary dustbin," or a "sanitary cart," but not a sanitary officer, unless it implies that other officers are insanitary!

Turning to Dozland's *Medical Dictionary* we find "sanitary" defined as "promoting or

pertaining to health," and in India we use the term Sanitary Commissioner to mean officer appointed to superintend matters "pertaining to health." We fancy therefore the term will remain.

The words *Sanitarium* and *Sanatorium* are also much misused, or at least mixed up. Thus we would (we think) speak of either Darjeeling or Simla as a Sanatorium, or a health station, but when we speak of the Eden Sanatorium at Darjeeling, we mean the excellent institution in charge of the Civil Surgeon, which is largely used by convalescents. On the other hand, we find Dr Arthur Latham, in his book on the *Modern Treatment of Consumption*, always uses the word "Sanatorium" and "Sanatorium treatment," in connection with the open air methods in use at Nordrach, Cotswold, Rostrevor, Davos-Doif, etc.

In the *Lancet* (July 20) Major L. Rogers, FRCP, FRCS, IMS, reiterates his plea for the recognition of the "seven-day fever" described by him as a separate entity. That the disease, as described by him, does not greatly resemble epidemic dengue we may admit, but we think it has many resemblances to the form of dengue recently seen in Manila, which we gave an account of in our August issue.

It is understood that the results of the anti-plague rat destruction campaign, carried out in the Punjab last winter, are satisfactory. From the figures already in the hands of the authorities, it is calculated that in nine of the most severely infected districts, namely, Amritsar, Sialkot, Ferozepore, Gujrat, Gurdaspur, Hoshiarpur, Ludhiana, Ambala and Rawalpindi from which details have been so far received, at least forty thousand lives were saved. In the Amritsar district alone it is estimated that over ten thousand persons were saved.

As we go to press, we have received the second instalment of the report of the Advisory Committee for the investigation of plague in India. This is a continuation of the report which chose as its medium of publication the *Journal of Hygiene*.

The present issue contains ten reports (Nos XI to XX) and consists of 148 pages. The first deals with the diagnosis of natural rat plague, other articles are on the transmission of plague by feeding rats, on the significance of the site of the primary bubo, further observations on the fate of the plague bacillus in the rat-flea (*P. cheopis*), and experiments on plague houses in Bombay, etc. We propose to deal with this report in our next issue. Meantime we hope this part of the report will be immediately circulated to all Medical Officers in India.

Dr E. E. Modder, of Ceylon, writes to the *Journal of Tropical Medicine* to advocate the theory that yaws is transmitted by ticks. Yaws is due to a spirochæte and a tick (name not given) is found in the yaws area of Ceylon.

THE Parke's Memorial Prize, consisting of seventy-five guineas and a bronze medal, is awarded every third year to the writer of the best essay on a subject connected with Hygiene.

The competition is open to the Medical Officers of the Royal Navy, Army and Indian Services, of Executive Rank on full pay, with the exception of the Professors and Assistant Professors of the Royal Naval Hospital, Haslar, and the Royal Army Medical College, London, during their term of office.

The subject for the next prize is the following: "The Part Played by Blood-sucking Insects in the Causation and Spread of Disease in Man, and the Measures to be Recommended for the Prevention of such Diseases." (Note—The Essay must include the results of personal observation and research.)

Essays to be sent in to the Secretary of the Prizes Committee, Royal Army Medical College, Millbank, London, on or before December 31, 1909. Each essay to have a motto, and to be accompanied with a sealed envelope bearing the same motto, and containing the name of the competitor. The successful essay becomes the property of the Prizes Committee.

By order of the Prizes Committee Surgeon-General Sir A. Keogh, KCB, Director-General, AMS, President, Major C. E. P. Fowler, RAMC, Secretary.

THE Hanbury Gold Medal has been conferred on Mr David Hooper, FCS, FLS, of the Indian Museum, Calcutta. The Medal is awarded biennially for the promotion of original work in chemistry and natural history. It was won by Dr W. Dymock in 1887, and by Sir Geo. Watt in 1901. Mr Hooper is the joint author with Drs Dymock and Warden, IMS, of the *Pharmacographia Indica*.

As we go to press, we regret to learn of the death of Major T. W. A. Fullarton, BA, MB, FRCSI, another victim, like Major D. M. Mon, of blood-poisoning contracted during an operation. Major Fullarton had just returned from long leave and had only recently taken the FRCSI. He was a well-known Civil Surgeon in the United Provinces, and did splendid work during a plague epidemic at Allahabad, for which he received the K. I. H. Medal in 1902. He entered the service in July 1892, and was promoted Major in 1st July 1904.

A BOOK is in the press, and will soon be published by Messrs Thacker, Spink & Co here.

is coarse, the shadows of the bones and of the overlying fissures can by appropriate means be obtained by the same exposure on the same plate, and the aid which this may afford to the operator in the attempt to remove a foreign body is evident. There are a number of skiagrams illustrating congenital and other bony deformities. The section in the thorax is full and the importance of the X-ray in the diagnosis of disease here is entirely appreciated and insisted upon. A useful contribution by Dr Crane of Michigan on "Medical Diagnosis by the Rontgen Rays" is incorporated. In taking up the action of the focus tube on the skin and deeper structures, an instance is given where cerebral exposure resulted in symptoms resembling sunstroke, and another where abdominal exposures caused diarrhoea, this ceasing with their cessation and beginning again when they were resumed, and the experience of Tilden Brown and Osgood in America is quoted, which was that repeated exposures of men to the Rontgen rays produced sterility. They recommend that men using the X-rays much should wear an impermeable shield over the genital organs. Finally, the place of the rays in treatment, legal medicine, anatomy, and veterinary surgery are indicated. The book is a useful one for X-ray workers.

A Practical Treatise on Sexual Disorders of the Male and Female—By ROBERT W. TAYLOR, M.D., New York. Third Edition. Price 16s net. HENRY KIMPTON, London, 1905.

THIS edition has been thoroughly revised and brought up to date by the author. Four new chapters have been added, while many new illustrations have been interpolated in the text. The anatomy and physiology of the generative organs having been fully dealt with, the author then systematically describes in detail the ætiology, symptoms and treatment of all known varieties of sexual disorders, especially as regards their bearing on sterility. The author is to be congratulated on having produced an eminently practical and useful work of reference.

Hypnotism or Suggestion and Psychotherapy—By AUGUST FOREL, of Zurich, London, REBMAN & Co, LTD.

NOTWITHSTANDING the fact that many British Physicians have recourse to "suggestion" in the treatment of functional disorder, yet few are openly willing to admit that psychotherapy has played a part in their methods. Such reticence is doubtless largely the outcome of a very natural dread of being placed in the same category with quacks and impostors (styling themselves spiritualists), who bring mesmerism and allied methods into disrepute and suspicion by ostensibly attributing their obviously illusive show-phenomena to the effects of those methods. The remarkable results, however, which have from time to time recently been reported by American and continental medical men as accruing from

the therapeutic application of suggestion during varying degrees of hypnotism should go far towards dispelling such reticence, and to the open acknowledgment of these aids as an important part of the armamentarium of every fully equipped physician.

Much, we venture to think, would be gained in this direction by a careful perusal of D. W. H. Armit's excellent translation of an extremely interesting work entitled *hypnotism or suggestion and psychotherapy* by Dr August Forel of Zurich, recently published by Messrs Rebman & Co, Ltd. The work is a digest of the psychological, psycho-physiological and therapeutic aspects of hypnotism by a psychologist and physiologist of high standing, whose main aims appear to be to awaken enthusiasm for the study of the functional aspects of thought and psychical exercises, and to dispel the suspicion and misunderstanding which, even among medical men, have come to be largely associated with methods savouring of the mysterious, and falsely laid claim to as their "*vis a tergo*" by charlatans. Pledged to the monist belief, the author considers that he is justified in stating, in complete agreement with Bernheim, that in the essence of things, there is only one scientifically assured method of inducing hypnosis, *viz*, the induction of this condition by suggestion, be it by means of the dictation of others or by auto-suggestion. He considers the mental activity of the hypnotized to be more or less dependent on the influencing of the hypnotist, and that the influence exercised may extend itself post-hypnotically into the normal condition of the mind, and be continued for a long time effecting extensive reactions on nearly all the functions of the nervous system, including such processes as digestion, defecation, menstruation, pulsation, blushing, etc. While expressing doubt as to the reality of such alleged effects as telepathy, direct thought reading, etc., he considers that unprejudiced science demands closer investigation regarding such in justice to many trustworthy persons (probably wanting in discernment), who have affirmed the absolute fulfilment of presentiments, etc.

The many remarkable cures enumerated afford ample testimony to justify his conviction as to the functional effects produced by his methods. Among other effects, he points out that habits are often induced into suggestively, and in this connection, refer to the pedagogic importance of suggestion, which may either be employed "symptomatically" in order to combat bad habits and perverse qualities of character, or "developmentally" in attempting to form character in the young by unconscious suggestion, *e.g.*, the teaching of obedience as a natural unavoidable thing, rather than by unnecessary threats or incite anger.

In a chapter devoted to hints to the practitioner who wishes to obtain satisfactory results by psychotherapy, such qualities as patience,

enthusiasm, consistency, an unhesitating manner, strong initiative and the faculty of individualizing are held to be essential, the most patent causes of failure being want of concentration, personal initiative and self-confidence. Among methods, Vogt's, Bernheim's, Grossmann's and others are described, but the author recommends the Liébeault-Weststrand or Collective hypnotizing method, by which a number of persons are dealt with in sight of each other and thus led in some degree to influence each other. Stress is laid upon four important points, viz, (1) The necessity for witnesses, (2) the suggestion to very suggestible persons (somnambulists) that no one else can hypnotize them, (3) previous permission of patients, and (4) the use of the method only for therapeutic purposes.

The first of these precautions is doubtless, the outcome of the author's conviction that any conceivable crime may be committed on a hypnotized person provided that a sufficiently high degree of hypnosis be attained, and, regarding the last, an exhaustive list of the conditions and habits in which the treatment is indicated is enumerated. Not the least striking feature of the work is the repeated warning that suggestive treatment has its limitations, that it is not a panacea for all ills, that if overdone, it may do more harm than good, and that one often finds apparently suitable cases in which, however, certain circumstances contra-indicate its adoption.

The author also lays great stress on the strong confirmatory evidence afforded by his methods of the view that where "suggestion" is the real factor which leads to the satisfactory results constantly announced as accruing from homeopathy, natural methods, Christian science, Kneipp's cures, metallo-therapy, balneo-therapy, etc., etc., by clever swindlers who, though taking advantage of ignorance and superstition, and having recourse to lying advertisements, succeed in competing successfully with sound Medical science. From many points of view, therefore, a careful perusal of the work would amply repay the reader and give him in the words of the author a grasp of hypnotism "not only half or superficially, but fully."

ANNUAL REPORTS

BENGAL HOSPITALS REPORT

THE notes on the annual returns of the Bengal and Calcutta Hospitals was sent in by Colonel R. Macrae, I.M.S., the Inspector General of Civil Hospitals. The continued increase in the indoor and out-door attendance at the Calcutta Hospitals is an indication of their ever increasing popularity. This is especially marked in the College Hospital, the Eye Hospital, the Campbell Hospital and the Sambhu Nath Pandit Hospital. The attendance at the latter is so great that it is almost always overcrowded, and its early extension is very desirable.

We note that Colonel Macrae is of opinion that tuberculous diseases are much more common in Calcutta than is generally believed, a view which we consider to be altogether true, and we are in accord with him when he calls attention to the great

neglect and absence of philanthropic effort in this direction. In the matter of provision for the modern treatment of tuberculosis, Calcutta and India generally is sadly behind, and we hope that now that Colonel Macrae has drawn attention to this matter, it will receive consideration at the hands of the wealthy noblemen and gentlemen in the province.

We need say no more about the work done in the Calcutta Medical College, as we have published Lieutenant Colonel Lukis' admirable report in a recent issue (June 1907) —

"The total number of operations was 29,590 against 30,110 in 1905. There was a falling off in most of the important hospitals, chiefly in the Medical College Hospitals, 519, for which no satisfactory reason is given. The surgical work at the Howrah General Hospital showed, however, a decided advance, there having been 538 more operations in 1906. The Eye Hospital had an addition of 336 operations. The medical officers who performed a large number of important operations in 1906 were Lieutenant Colonel F. S. Peck, I.M.S., 366, Lieutenant Colonel E. H. Brown, I.M.S., 233, Major F. P. Maynard, I.M.S., 665, Major D. M. Moir, I.M.S., 187, Major F. O'Kinealy, I.M.S., 177, Major R. Bird, C.I.F., I.M.S., 126, Assistant Surgeon Satis Chandra Das, 593, and Assistant Surgeon Karuna Kumari Chatterjee, 172."

There were 560 dispensaries at work in Bengal in 1906 and 18 new ones were opened, but many more are still needed.

We quote the following remarks —

"Although the health of the general population was on the whole better than in 1905, the advance in the amount of hospital relief is satisfactory, and forcibly testifies to the growing popularity of the dispensaries. In this respect the individuality of medical officers plays an important part, and the Commissioner of the Bhagalpur Division speaks well of Major Chatterton, I.M.S., and Captain Thurston, I.M.S., in connection with the large increase (259) which took place in the number of house patients in the Monghyr Hospital in 1906. The Berhampore and Bankipore Hospitals which are rapidly growing in popularity, occupy the second and third positions in the list with an increase of 259 and 231, respectively. The Lady Elgin Hospital at Gaya had an addition of 212. There was on the other hand, a decrease of 118 at the Krishnagar and 103 at the Burdwan Hospitals. In the former, the result is attributed to the healthiness of the district, but I think the hospital work is capable of improvement and have already drawn the Civil Surgeon's attention to this matter. The fall at Burdwan was due to the hospital having been under repairs. The Bankipore Hospital treated the largest number of patients, viz, 1,793 in 1906, followed by Burdwan with 1,618, Gaya with 1,294, and Monghyr with 1,216."

In some hospitals the increase of attendance is most remarkable e.g., the Lion's Gate dispensary near the temple at Puri had a genuine attendance of over 12,000 patients in the year, the hospital at Lakeria Serai in Dumburgh heads the list with an attendance of no less than 70,100 patients, others showing a large increase are Sikri in Darbhanga and Rhubaneswar in Puri district.

On the subject of surgical operations we quote from the report —

"The surgical record of 1906 also shows an increase, the number of operations having been 155,680 against 152,227 in 1905. Including the operations in the Calcutta Medical Institutions, the total for 1906 was 153,276, as compared with 201,480 in the United Provinces of Agra and Oudh for the same year. There were 2,714 extractions of the lens against 2,239 in 1905. Vision was restored in 2,475 giving a ratio of success of 86.09 per cent. Stones in the bladder were removed by Lithotomy in 81 instances, against 93 in 1905, while the modern method of crushing the stone was followed in 124 cases against 117 in the previous year. There were 13 Ovariectomies against 9 in 1905 with 64 per cent of recoveries.

The list of medical officers who performed a large number of important surgical operations in 1906, is headed by Major C. E. Sunder, I.M.S. (Gaya), with 393, followed by Major B. H. Deane, I.M.S. (Bankipore and Motihari), 277, Lieutenant Colonel T. Granger, I.M.S. (Mirzapur), 159, Major C. R. Stevens, I.M.S. (Cutack), 156, Major A. Gwyther (Chapur), 154, and Captain E. A. Thurston, I.M.S. (Monghyr), 131. Assistant Surgeon Hari Das Mitra (Dumraon) performed 220 operations, Assistant Surgeon Debendro Nath Hazra (Purnea), Berhampore and Dinapore), 197, and Assistant Surgeon Tripura Churn Guha (Bettiah), 193."

Colonel Macrae's remarks are as follows —

"It is very satisfactory to note the increasing interest and liberality shown by District Boards and many municipalities towards hospitals within recent years. With the aid of the District Officers who evince interest in medical works, Civil Surgeons who are energetic are enabled to effect great improvements and many of the district head quarters are now provided with substantial modern type hospitals, and several of the others improved beyond recognition—a pleasant change from the starvation policy of former years. Many native gentlemen have shown much liberality towards the dispensaries during the year."

THE ASYLUM REPORTS

I—PUNJAB

The Report of the large asylum at Lahore is usually one of special interest. We note in the notes on the statistical table for the year 1906 that in spite of a slightly reduced average strength there is still considerable deficiency of accommodation, but the scheme for enlarging this asylum is nearing completion.

The "wave of malaria" in the Punjab in the autumn of 1906 is seen reflected in the increased number of sick in the asylum. The death rates were 84 per mille of average strength for males and 129.4 for female lunatics.

On the subject of criminal lunatics we are disappointed to see no new development.

Colonel Bate writes as follows—

"The original intention was to segregate this class from the non-criminals, but the structural arrangements of the asylum, the increase of population and the exigencies of management entail a certain amount of association, which is very objectionable. Captain C. J. Robertson Milne, while acting as superintendent, represented the desirableness of completely segregating criminal lunatics in a special asylum, and I entirely share his views on the subject. Here I may appropriately mention that steps were taken last year to segregate juveniles from adults, much to the advantage of both."

The following quotation from the Government Resolution on the reports indicates, however, a change of view, which is to be regretted—

"The question of the segregation of criminal lunatics was referred to the Government of India during the year, but the proposal for a special criminal asylum for all India has not found favour owing to various practical and technical difficulties involved in the scheme. There also appear to be objections to complete segregation and rigid confinement of lunatics of this type from the alienist point of view, and a case for the provision of a purely local criminal asylum has not yet been satisfactorily established."

II—BENGAL

There are only three asylums now in Bengal, the Cuttack asylum was closed and handed over for incorporation with the neighbouring jail, and the lunatics were transferred to the enlarged asylum at Berhampore which acts as a quasi-central asylum, pending the construction of the hospital for the insane at Ranchi. There are in all Bengal only an average number of 443 lunatics in all three asylums 211 (including 231 admissions) were admitted, 55 died and 133 were discharged. The old and obsolete asylum at Patna was slightly overcrowded for some time. The total death rate was 102 per mille, and Colonel Macree, who submits the reports, quotes the following death rates (per mille) in other provinces—

United Provinces	106.9
Punjab	94.3
Bombay	66.0
Madras	118.7
Burma	67.4
E. B. & A.	61.6

We quote the Inspector General's remarks—

"The principal feature of the mortality in Bengal Asylums is the large number of deaths which occurred from tubercle of the lungs at Berhampore, viz., 21, against 14 in 1905. Special attention is being given to the better care, treatment and diet of the afflicted. At my recent inspection it was decided to make better arrangements for their segregation in special tuberculosis blocks, both on the male and female sides, where the cardinal principles of the open air method of treatment can be better applied. Three deaths in this asylum resulted from injuries which will be referred to again later on. The mortality in the other asylums does not call for special notice."

With the following remarks on "criminal lunatics" we are in entire agreement—

"On the 1st January 1906 there were 401 lunatics detained in the asylums, 102 were admitted and 21 were admitted during the year, while 57 were discharged, 35 died, leaving 401 at the end of the year. The daily average strength was 398.10 against 400.89 in 1905. Two lunatics were discharged under the rules regarding the disposal of recovered criminal lunatics. Under existing rules many lunatics guilty of very trivial offences are thus classified, who should more properly be placed on the non-criminal side. At the instance of the Government, these rules, which were issued so long ago as 1888, have been revised and submitted for approval. The Superintendent of Berhampore as well as the Superintendent of the Patna Asylum report that there are a great many harmless lunatics charged with trivial offences in the asylum, but the difficulty which stands in the way of their release is that their friends cannot be found, or, if found, are not willing to take charge of them."

The attention of all Medical Officers may profitably be directed to the following remarks by the Inspector General—

Statement VII—"The information presented in this statement is compiled from Medical History Sheets which are required to be sent with lunatics. There was slight improvement in filling in these documents in the year under review, but both the Superintendents of the Berhampore and Patna Asylums point out that Medical Officers still seem to think from the heading of the return that they are required to sign these papers. This is, however, not correct. The committing officers are to prepare and sign them, and obtain information from the Medical Officer who examined the lunatics in question. At Berhampore many of these documents had to be returned for rectification of errors and discrepancies. In this connection the Superintendent suggests that, as in the Punjab, only Magistrates with first class powers (chiefly District Magistrates) should be authorized to direct the admission of lunatics to the asylum. This will ensure, he says, the reception of only the dangerous and destitute cases of insanity in the asylum and the supply of correct and full and complete particulars regarding them. The proposal, if adopted in this province, would act as a greater safeguard against the admission to the asylum of harmless lunatics who have relatives, but it will require a modification of the definition of the term 'Magistrate' in Act XXXVI of 1858. Physical causes were, as usual, responsible for most of the admissions to the asylums, viz., 63, or 29.85 per cent against 79 and 36.07 per cent in 1905. Intoxicants are credited with 41 cases against 51 in 1905. It is noticeable that in 10 cases in 1906 the cause was alleged to be spirit drinking. Ganga smoking is ascribed as the cause of lunacy in 29 cases against 40 in 1905. At Patna this cause was accepted from the patients' statements and the examination of their hands and thumb, neither of which are very reliable. Major Robertson Milne states that there is too great a tendency on the part of Magistrates and others to write without due enquiry such words as 'used to smoke ganga'. He suggests that the patients' version should be corroborated by the statements of their relatives and friends, by Police and Magistrates' records and physical signs of ganga indulgence. Moral causes accounted for 23 cases against 19 in the previous year. The cause of insanity was unknown in 59.24 per cent of the cases against 55.25 in 1905."

III—EASTERN BENGAL AND ASSAM

There are two asylums in this province, viz., that at Dacca and the one at Tezpur. The average strength of lunatics in these two asylums was 425, there were 147 admitted during the year. As in previous years, mania was the chief form of insanity, 70 per cent of new admissions being so classed, the next most frequent type was melancholia. The constant complaint of carelessly prepared Medical History Sheets is repeated here, as in other provinces. As in Bengal, tuberculosis is a very common complaint among lunatics, and is here attributed largely to exposure and want before admission. A special tubercle ward is being built at Dacca. The Tezpur Asylum is also overcrowded and a new ward is under construction. The floor space per head in the two asylums is only 50 sq feet, and for this class of patient this is certainly too low. The death rate was lower than in other provinces, being 61.6 per mille.

THE CHEMICAL EXAMINER'S REPORT, PUNJAB

This report is submitted by Lt Col D. St. J. Grant, I.M.S., and shows a considerable increase in the amount of work done by the Department, so much is this the case that Government has had to release the Chemical Examiner of his duties as Lecturer on Medical Jurisprudence at the Lahore Medical School. This increase is shown in human cases, in tests for stains and in general analysis. The following table shows the ratio of detection in the different classes of cases—

	1905	1906
Human poisoning cases	64.99	68.59
Cattle do	72.00	78.32
Blood cases	93.18	91.66
Semen and both blood and semen cases	76.42	88.96

Correspondence.

A CABINET FOR PRESERVING STOOLS FOR EXAMINATION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Of all the duties a doctor has to perform, the most disagreeable is that of examining the stools of a patient, and

no one has realized this more than those connected with large Hospitals and Jails, who have daily to examine a series of stools of patients suffering from enteric, dysentery, diarrhoea and spile, the last in different stages of fermentation, and those who have experienced it will agree that it is enough to upset the best educated nose.

The adoption of a simple contrivance, a "cabinet" resembling a jeweller's show case, would, I believe, meet the requirements, and save one of the most disagreeable experience a House Surgeon or visiting Physician is subjected to almost immediately after Chotr Hazi.

The Presidency General Hospital Calcutta, which is the most up to date in its appointments in India, has an excellent cabinet in each latrine (in the main block) 'let into the wall or I should say, let out of a window, to preserve the stools. Here stools are stored away completely out of sight, but has the one drawback which is present all over, that, at the time of examination they have to be brought out, and vessels arranged in a row and the melter uncovers each in turn for the inspection of the House Surgeon or Medical Officer. It is at this operation the want of a cabinet, such as I am about to suggest is felt, and the provision of one would save the Medical Officers, be it in a Hospital or a Jail, a very disagreeable experience.

Since my appointment to a jail, where the examination of stools is a Medical Officer's daily duty, the necessity of some contrivance has again recuried to me.

I might mention that I have heard of a "Maynard Box" spoken of, but regret that I have neither seen one nor read a descriptive account of one, but understand that it is some thing of masonry like a hot house in a garden with a glass roof, and whether my cabinet can claim any advantages over the "Maynard Box" or not, I cannot say, but leave it for my readers to decide but what I do claim, is in that it is efficient, durable, cheap, elegant and may be portable and if these qualities are worthy of consideration I would commend it to the notice of the Inspector Generals of Civil Hospitals and Prisons.

I believe, in England and the Continent glass jars are used, but such luxuries are out of the question in this country where the cost of glass jars is prohibitive.

The cabinet is made of galvanized iron about 2½ ft off the ground, with a glazed lid sloping like that of a desk, at a sufficient angle to permit the inspecting officer to have the contents in view without having to stoop forward. The dimensions of the cabinet to vary according to requirements.

As regards details. The body to be of thin galvanized iron sheeting, the frame of angle iron, the vertical corners being extended down to form the legs. The floor to be in two steps, the horizontal plane to be slightly slanting forward with a thin bar running across the front of the top step, so that when the vessels containing stool are placed on the slanting plane, it will be slightly cranting forward, to show off the contents of the pan and yet the bar in front will prevent it from slipping down. A couple of holes to permit an outlet of disinfecting fluids when the inside is flushed out. The lid is to be a frame on strong hinges carrying one or more panes of glass. The number of panes and divisions to depend upon the size of the cabinet. Over the top of this there is to be a second lid of thin wood or iron sheet to slide in and out on either sides. This second lid is intended firstly, to hide away the contents of the cabinet when not required, and, secondly, to protect the glass from breaking. The cabinet to be painted white inside and outside, it can be conveniently placed anywhere, inside a latrine or out in the open, exposed to the sun or rain, and if constructed neatly should not be unsightly or offensive. I may add that the lid be fitted with a couple of elbow jointed supports on either side to hold the lid up when necessary to keep it open. This will require no catches or clamps on the wall. Its efficiency combined with durability and cheapness are qualities that should appeal to everybody, and make it adopted universally.

J JAS BRACHIO,

June 1907

CIVIL SURGEON,

Palamau

[This cabinet is practically identical in all respects with the so called "Maynard Box" described in these columns many years ago, and in use in a majority of Bengal Jails. Such a cabinet is certainly desirable and most useful.]

Ed, I M G

PRIVILEGE LEAVE AND STAFF PAY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I have served eight years in the Panjab and on the frontier and can inform your correspondent 'Diddled,' that

in these parts it is the invariable custom of the service that an officer going on privilege leave keeps the whole of the pay of his appointment, whether that appointment is officiating or substantive.

Collateral billets are handed over with the pay to the man who does the work, and these billets are always handed back on the return of the officer from privilege leave.

It is purely reciprocal and it would be a thousand pities for any other system to be stated.

It has once happened to me, owing to a transfer in the middle of the hot weather that I officiated the whole summer for other men and got no leave myself, but that has since been made good as I have several times been on privilege leave and have not had any extra work to do on my return.

The only danger of unfairness is that some officers will take it on themselves to adopt the principle of handing over pay and then we shall all be at sixes and sevens, and in self defence shall have to take general leave and make sure of getting our half staff pay.

13th June 1907

Yours, etc.,
ANTI BUNNIAH

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Dr Diddled's letter in the June number of the Gazette. The custom in my present station is for an officer to draw his full regimental pay while on privilege leave, but should he hold any outside appointments he makes his own private arrangements for these, e.g., this year I paid an officer 100 rupees a month for doing the cantonment hospital, of which the pay is 150+ house allowance 30.

I have taken privilege leave three times and have never given any part of my regimental pay, nor have I ever received such, being always prepared to do my substitute's work should he wish to take leave on the same plan.

I quite agree that uniform practice is desirable, and when the substitute is of the same service, the above seems fair. I don't know what is customary when an R A M C officer officiates for one, and should be glad to learn.

I have the honour to be, etc.,

X Y Z

THE ETIOLOGY OF BLACK WATER FEVER

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Your article (June, I M G), on Black water fever has been reproduced in *The Englishman*, and this impels me to write to you on the subject.

Having been for four years medical officer to the construction staff of the Sierra Leone Government Railway, I have had the opportunity of seeing a fair number of cases of this disease and have always taken a great interest in the question of its etiology.

Your article is more or less a resume of that by Dr Stephens in Allbutt's "System of Medicine." Unfortunately I have not the original article at hand to refer to, but your comments are sufficient for my purpose. The summing up of the etiology of black water fever 'that it is malarial in nature, and that the onset of the disease is induced most commonly though not invariably, by quinine,' is the position which I wish to discuss.

It is impossible to say that quinine has nothing to do with the causation of hemoglobinuria, as practically every case that comes under the observation of a medical man has already been dosed, or dosed himself with the drug, but that there is something further which has not yet been discovered, I am convinced. Again that there is some relation between malaria and black water fever, I quite believe, but what that relation is requires to be worked out.

To take the latter point first, when I was in Sierra Leone I attempted to work it out statistically. We had about 50 Europeans living mostly a rough and exposed life, under canvas, for months at a time and without many of the luxuries of civilization, so that with scarcely an exception every man suffered more or less from malaria. There was a system of records by which each man's medical history in the colony could be traced, and I tried by the aid of these records to find some relationship between the number of days each man was on the sick list from malaria and the incidence of black water fever. All attempts in this direction yielded no result except the one fact that each sufferer from black water fever

had more or less malaria, which was, of course to be expected as practically every man suffered in this way to some extent. Still the fact that blackwater fever is only known where malaria in its intensest forms is prevalent, is almost sufficient to establish the existence of some relationship between them.

Now as to the action of quinine, it is acknowledged that quinine under certain circumstances will produce haemoglobinuria (of Hare's Practical Therapeutics p. 166), so also will other drugs. I am however far from denying that it may be a factor in the disease but that it is the only one (in addition to malaria) or even the chief I do not believe.

To revert to my experience in Sierra Leone out of an average resident strength of about 50 Europeans on the railway staff about 4 or 5 per annum were attacked with blackwater fever, but if quinine plus malaria were the sufficient and exciting causes, surely one would have expected to find a higher percentage of attacks among a population practically every member of which was exposed to both these causes. Dr. Stephens quotes cases in which patients voluntarily submitted to the administration of quinine knowing that it would precipitate an attack of haemoglobinuria and in which such a result followed. I can remember at least one case in which the patient after recovering from an attack of blackwater fever suffered from ordinary malaria and was treated in the usual way with quinine without any untoward result, and if I had the records at hand I could add others. My experience of this disease has all been among Europeans and if it can be shown that natives who have not received European treatment never suffer from it, the argument in favour of the quinine causation theory would be a strong one. Manson, however says 'Native Africans enjoy a relative immunity from haemoglobinuria fever. This is not absolute however.'

I am sorry not to be able to contribute some positive facts to this discussion but the nature of my work, treating patients in remote camps, and acting as nurse as well as doctor, made it impossible to carry out the investigations one would have wished. I can only say that I believe you, Sir, are on the right line when you say that it is due to a special parasite possibly akin to that of *Leishmania* in cattle.

Plehn's theory of a kidney lesion is attractive but against it must be put the fact that all the patients whose cases have come under my view were picked men and had all undergone a stringent medical examination before coming to Africa.

My own idea is that the liver will repay investigation, but that is only a guess.

As the matter has reached the columns of the lay press, there is a danger that the public may get the idea that quinine ought not to be administered in malaria, thus adding to the difficulties already experienced by the unfortunate medical man in malarial countries.

It is to be hoped that the commission which is about to examine this question in the Durais may be able to throw some light on the matter and I sincerely trust they may be able definitely to pronounce on some cause of the disease but that that one sufficient cause will be quinine, I very much doubt.

I am, Sir,

Yours, etc.,

W. A. MURRAY, I.A.M.S.,

M.O., Assam Bengal Railway,

formerly C.M.O., Sierra Leone,

Government Railway Construction.

PRIVILEGE LEAVE AND STAFF PAY

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—Reference "Diddled's" letter re 'Privilege Leave and Staff Pay' published in your paper of June 1907, I consider that an Officer should pay nothing, except out of pocket expenses.

Yours, etc.,

S. R. —, CAPT., I.M.S.

THE WEIGHT OF VESICAL CALCULI

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—Will you or any of the learned readers of your valuable Gazette kindly inform me of the weight in grams of six of the largest stones removed from the bladder by

lithotomy or supra pubic lithotomy. Also state kindly by whom and with what result.

AUPANGABAD,
June 23rd, 1907.

Yours faithfully,
LITHOTOMIST

QUININE IN PREGNANCY

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—With reference to the letters in your correspondence column re use of quinine in pregnancy I have had three abortions I believe as the result of quinine.

1 After two doses of 20 grains taken for the purpose of procuring abortion.

2 After taking a mixture, gr 5 to 3i ordered t.i.d.s., taken four hours eight doses.

One abortion from two doses of 10 grs each taken for fever not higher than 103° F. I have as a general practice used gr 5 t.i.d.s. in pregnancy cases as a malarial prophylactic and a stimulant and uterine contraction, particularly in the second stage of labour.

I also use it after confinement, and have very little trouble from subsequent "milk" fever so common in this country.

Yours, etc.,

H. G. WATERS,

Dist. Medical Officer, L. I. Ry.

UNQUALIFIED PRACTICE IN INDIA

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—A few words on the practice of unqualified medical men might not be out of place here. Rather I should think will help our profession to form an idea into the real state of affairs. It is a known fact, that besides the qualified medical men, there are some so called 'Doctors' who pass as such and practise the profession in and outside Calcutta, I believe the number of such men is daily increasing, and unless something is done the result cannot be anything but disastrous. One has just to look round the streets of Calcutta and see the number of door plates on different houses and dispensaries. We see Dr. so and so is here, such another is there, and so forth. If we enquire we find many of them are practising without any license or professional qualification. A few of them, perhaps, are passed compounders or apothecaries. Some are not even that, perchance these men were in touch with some dispensary or doctors and have turned out to be "Doctors" themselves. Yet another class of men have not the municipal license even they practise amongst the poorer classes. These men have, as a rule, nothing else to do or are attached to some office on small pay. They start with some written prescriptions and practise homoeopathy and allopathy as the case may be on occasion needs. The poorer classes who cannot afford to call in a qualified medical man are always ready to go for hospital treatment, but these unscrupulous men create a feeling of fear and distrust into the minds of these innocent men as regards hospital treatment. This happens specially with the men living at the mofussil. Even now some are under the impression that patients are poisoned at times when there is any severity of dead bodies. Still another class of men hold some bogus titles and practise homoeopathy. These men are M.D.'s, of some American University, but they have never seen America except in geographical maps. The conduct of such men is scandalous, and I might go a step further and say criminal.

These so called 'Doctors' have neither sense of responsibility nor of duty. They care not, whether their patients are killed or cured as long as they find they have something to fill their pocket with. The public do not know who are qualified and who are not. The I.G. of Civil Hospitals issues annually a list of qualified medical men of Bengal. This is good in itself. But what is its use? It might help the professional or business men. The public do not consult this before going for a doctor. The idea of issuing such a list is no doubt very good, but none gets the full benefit of it. What is the use of making such a fuss if these men or so called "Doctors" are allowed to practise and get a license to hang up a board by paying the municipal fee? It is the business, rather duty of the Municipality to satisfy themselves with the qualifications before granting a license. This is never done here. They will grant a license to anybody who would care to pay their license fee. If they keep their eyes shut it is high time that the Government should take up the cause. The worst part of it is that everybody now a days seems to be bit of a "Doctor" and practise either allopathy or homoeopathy. Who is responsible for all these and for the lives that are being sacrificed for want of proper aid, and owing to the mistaken idea that they were treated by qualified

medical men I am inclined to think, that unless some steps are taken from the General Medical Council, nothing could be done to do some material good.

These men should be haunted out, the authorities should have a firm grip on them, they should be asked to produce professional qualification. Medical men should be deputed to investigate the matter instead of depending upon the municipal license, inspectors who are innocent of all knowledge of medical qualifications. Every man should be asked to produce a death certificate from a qualified medical man at the burial ground or burning ghat.

I have tried to unfold the real state of affairs, and would now request the Editor to take up the cause, and also to remind him that this had long been discussed in papers only without any real effect. It is not to the interest of the profession, but for the interest of the general public and for the suffering humanity that I wish the authorities to be impressed with the importance of adopting some drastic measure, and the sooner it is done the better for all.

In conclusion, I hope that this will not die away in oblivion, but will form the nucleus of some real practical work.

CALCUTTA,
June 8th, 1907

Yours, etc.,
GHOSH, L M & S, etc

THE INDIAN MEDICAL SERVICE

BY D G CRAWFORD, M B

LIEUT COLONEL, I M S,

Civil Surgeon, Hughli

(Continued from page 318)

13 *Scope for varying tastes*—One advantage of the I M S. has always been the great scope available for different tastes, scientific and literary, as well as professional. In this connection it may be of interest to give a list of some of the officers of the I M S, who have achieved distinction in various lines, not strictly professional.

(1) *As Civil and Political Officers*—John Zephaniah Holwell, John Crawford, Resident at Singapore, John Leyden, C C Assay, Secretary to the Government of Java, Sir John Macneill, Minister in Persia, A Campbell, Superintendent of Darjeeling, Sir John Login, tutor to Maharaja Dulep Singh, Ex king of the Punjab, C Hathaway, Private Secretary to Lord Lawrence, when Governor General, and Sir George Robertson. Here also may be mentioned the services of Sir William Brooke O'Shaughnessy, in establishing the Telegraph Department in India, James Rankin and George Paton, in the Post Office, and Hugh Cleghorn and J L Stewart in the Forest Department.

(2) *As Oriental Scholars*—J Z Holwell, Francis Balfour, James Ross, Francis Buchanan, John Crawford, John Leyden, J B Gilchrist, John Taylor, James Atkinson, Horace Hayman Wilson, T A Wise, Aloys Sprenger, H W Bellew, and G S A Ranking. Of these, the two most eminent were Leyden and Wilson, whose oriental learning and scholarship has been equalled probably by Sir William Jones, alone of Indian officials.

(3) *As men of Science, a long list*

(a) *In Botany*—William Roxburgh, Whitelaw Arushe, William Jack, Nathaniel Willich, James Anderson, John Forbes Royle, Clarke Abel, William Jameson, William Griffith, Robert Wight, Alexander Gibbon, Hugh Cleghorn, T Thomson, J L Stewart, Thomas Anderson, Emanuel Bonavia, J E T Aitchison, George King, and David Ptain.

(b) *In Natural History*—Patrick Russell, Thomas Jerdon, Francis Day, G C Wallich, H Vandyke Carter, and A W Alcock.

(c) *In Chemistry and Allied Sciences*—Ralph Irving, Julius Jeffreys (inventor of the respirator), Sir W B O'Shaughnessy, F N Macnamara, and C T H Warden.

(d) *In Pharmacology*—Whitelaw Arushe, John Forbes Royle, and E J Waring.

(e) *In Geology*—Hugh Falconer, H J Carter and John McClelland.

(4) *As Travellers*—John Fyler, Patrick Russell, T Howel, G P Bryfield, John Crawford, W Griffith, James Burnes, Percival Lord, T Thomson, H W Bellew, H J Blanc, George Henderson, and, in the past few years, W G Thorold, and C C Mansfield.

(5) *Officers who have distinguished themselves or held important posts after retirement*—Sir Bussick Harwood, Professor of Anatomy and Medicine at Cambridge, Joseph Hume, M P, from 1842 to 1855, and Privy Councillor, John Fullerton, Banker and Currency authority, H H Wilson, Boden Professor of Sanskrit at Oxford, Sir John Macneill, Minister to Persia, Chairman of the Scottish Poor Law Board, and Special Commissioner in the Crimea, John Forbes Royle, Lecturer on Materia Medica at Kings' College, London, William Hewitt, Physician to William IV, J A Lawrie, Professor of Surgery in Glasgow University, Aloys Sprenger, Professor of Oriental Languages at Berne, Charles Murchison, Physician to Middlesex, St Thomas' and the London Fever Hospital, Sir John Trevor Lawrence, M P, and Treasurer of St Bartholomew's, N C Macnamara, Surgeon to Westminster Hospital and Vice President of the Royal College of Surgeons, W S Playfair, Obstetric Physician to Kings' College Hospital and author of the most readable work on his speciality in the language, P J Freyer, Surgeon to St Peter's Hospital, the performer of the operation of prostatectomy, Dr John Forbes Watson, Reporter on Economic Products to the India Office, and Sir George Birdwood, Special Assistant in the Statistical and Commerce Department, India Office.

14 *Mortality and Longevity*—In former times the mortality of Europeans in India, of all services and of all ranks, was very high indeed, but it has now sunk to what may be called a normal level, and officers serving in India incur little more risk to life and health than at home. Though cholera, dysentery, malarial fever, or rather its sequelae, and among the young especially enteric fever, still take their toll of life, the doctor in India escapes many risks which he has to take as a matter of course, at home, those of the ordinary infectious diseases of Europe, scarlet fever, diphtheria, etc., none of which can be called common, though most do occur, in India, and risks due to exposure, especially at night, in a cold climate.

Even in early times, however, many men put in long periods of Indian service, and survived to enjoy a prolonged period of retirement at home. It has already been related how Holwell, after nearly thirty years of hard service in India, with only one long spell of absence in England, lived in retirement for over thirty-eight years. And his was by no means a solitary instance. At least twenty-two officers of the Bengal service, who retired previous to 1840, lived in retirement for over thirty years, four of them being men who had been invalided from the service. Fourteen of them lived over forty years, and five, all of whom, however, retired young, for over fifty years, one for nearly fifty-six years. The most singular case is that of an officer, invalided on first June 1813, as unfit for service in India, who settled at Serampur, near Calcutta, a place not usually regarded as a sanatorium, and died there on 6th November 1863, more than half a century later. The oldest retired officer of the I M S was John Bowron, who was born in February 1799, entered the Subordinate Medical Department in 1813, was promoted to Assistant Surgeon in 1825, retired in 1851, and died at Hove, near Brighton, on 5th March 1899, a few weeks after completing his hundredth year. The Indian Army List of 1st January 1907 contains the names of eighty-eight Medical Officers of the I M S on the retired list, who had entered the Army more than half a century before, and were still living.

As the vacancies for the I M S are never very numerous, it is not easy to make a fair comparison, as to longevity of any considerable numbers. The largest number ever admitted to the Bengal service at one examination was 28, who entered on 30th March 1872.

Five of these twenty eight were natives of India. Of the whole number, six died while serving, with 4, 8, 15, 20, and 25 years' service, respectively, the third and fourth being natives. One has recently retired having completed a five years' tour of office as Surgeon General. Twenty two retired, one at 17 years' service, four at 20 years, ten between 25 and 30 years, and six with over 30 years' service. Of these 21 retired officers, only six have since died (one by accident) and sixteen are still living. A mortality of 11 out of 28, in 35 years, would not be considered high, especially among medical men, in England. One, as stated above, rose to the rank of Surgeon General, four more to Colonel, while two others officiated in that rank for a considerable period. Four held for many years lucrative appointments in Calcutta, and two more in other parts of the country, one was Asst. Master of the Mint, and another Inspector General of Prisons. These 28 officers have received three C B's, one D S O, and two Good Service Pensions, shared by four individuals not in the record for the men of one half year!

15 *The I M S contrasted with other medical careers*—How do the prospects of a man entering the I M S compare with those of his contemporaries who adopt other branches of the medical profession? The R A M C offers about as much pay, the chance of serving in other parts of the world, South Africa, the Mediterranean, the West Indies etc., and varying periods of home service, as against the liberal furlough granted to the I M S. On the other hand, the I M S offers many interesting and many lucrative appointments in the Civil Departments, and considerably better chances of earning both money and professional distinction, as well as higher pensions.

There can be no question that, as regards pay and pension, the I M S offers a better career than the Colonial Surgeoncies, and while the climate of some of the Colonies is better than that of most parts of India, that of others is worse than India at its worst.

The pay and pensions of the I M S are also better than those of the Medical Department of the Royal Navy, the chief advantage of which is the great opportunity it affords of seeing the world. On the other hand, medical, like executive officers of the Royal Navy, are liable to be placed on half pay when the "commission" of the ship in which they are serving comes to an end, and discipline afloat is much stricter and more severe than in the land forces.

As regards the public medical services in England, the Prison service, the Lunacy service, etc., the I M S offers better pay, prospects, and pension, coupled, of course, with service in India instead of at home.

But, after all, the great majority of newly qualified medical men embark upon private practice at home, and the chief question for the man who is thinking of entering the I M S must be—how do his prospects in England compare with those of the service? Well, the I M S does not offer the great prizes which he open to the most successful men at home. But how many men attain these prizes? Not one in a hundred, and even in the case of those who do grasp the highest prizes, the fullest success, open to the medical profession. "These men begin to earn late, and their earning years are short. Sir Thomas Watson never earned £500 in fees till he was fifty, Sir James Paget never took £400 till he was forty seven. Their work was personal, and their harvest time short." [Dr Holman's speech at the Festival dinner of the Royal Medical Benevolent College, Epsom, June 10th, 1903, quoted in *British Medical Journal* of 13th June 1903, pp 1401-2]. In short, the men who attain the highest prizes in England begin to

do so at an age little earlier than that at which a man in the I M S may be thinking of retiring on a fair pension.

Setting aside the few who attain to the most brilliant success, no doubt, at least as much money may be earned, and more professional reputation achieved at home than in India. But even those who reach what may be called the second rank in England are comparatively few in number. And a man may achieve considerable distinction in his profession, as a member of the staff of a hospital, before he is earning a fair income. No doubt, the latter will come, if he lives long enough. But who can guarantee that? And if his earning days do not come before his death he leaves little provision for his family.

It seems clear that the great majority of men in private practice can never hope to achieve much professional distinction, or any considerable fortune. A comfortable income, and a moderate provision for those they leave behind, is the most which can be expected, even by the comparatively successful. And for them there is no early retirement in middle life, that comes only to the fortunate few, most medical men die in harness, a very large proportion at an age earlier than that at which they would even wish to retire.

What about the bulk of the profession? A writer in the *British Medical Journal* recently calculated the average income of the medical practitioner at home as £190 a year, tending to decrease. This really seems too bad to be true. For, if it includes on one hand the large number of young men who are working for next to nothing, for board only as Residents, or for small salaries as Assistants, it also includes those who have reached the fullest success. But even if the above statement be an exaggeration, as it is to be hoped it is, the facts are unpleasant enough. Every issue of the medical journals teems with reports upon "contract practice," in which the medical officer of a club attends its members for a penny a week, four shillings and four pence a year, sometimes even less, and is struggling, often without success, to raise the amount to five or six shillings. And, to judge from these reports, in many places the majority of the medical men do more or less of such club work. The miserable payment for poor law work in England is well known. The Irish dispensary doctors are trying to get certain terms from their employers, not less than £200 a year for a dispensary district, £120 for a workhouse, or £300 for the two together, with a small superannuation pension at the age of 65 (*British Medical Journal*, 27th June 1903, p 1518). Many of these appointments are to districts, in which private practice is nil, a few pounds as medical officer of health or in vaccination fees is all that the dispensary doctor can hope to earn over and above his regular salary, possibly, if he has a workhouse, £350 in all. In other words, he hopes to get as a permanency, about the amount on which the newly joined officer of the I M S begins. In the *British Medical Journal* of 27th June 1903, Dr J Fletcher Little, L C C, speaks forcibly of the present condition of the average general practitioner in England as follows: "The long and costly training, the arduous nature of the work, by night as well as by day, the inevitable and heavy expenses, the few prizes, and the small average net incomes, the strictly personal and precarious character of the work, which causes all earnings to cease during illness or incapacity, the short average of life, which is less than that of other professions, such as the clerical and the legal, the warning increase of insanity from the intolerable strain." * * * &c. Surely the I M S, with all risks, offers a better prospect than this.

Some men start under more favourable circumstances, sons or nephews of men in good practice, which they may hope, when qualified, to share, and to which they will probably eventually succeed. To such men the services, as a rule, do not appeal. Yet the eldest

sons of three medical baronets, all leaders of the profession, have entered the services, the sons of Sir Robert Christison and Sir Thomas Lawrence in the I M S, the son of Sir Andrew Clark in the R A M C. Only the first of the three, however, put in the full period of service.

15 Conclusion—

In the preceding pages an endeavour has been made to set forth fairly the prospects which the I M S offers to those who join its ranks, not concealing its disadvantages, which are many, while setting forth its advantages, which are more. Service in the I M S means work, man earns his living by the sweat of his brow, nowhere more literally so than in India. Of course, it involves a long residence, to use the harshest word, "exile," in India, but exile tempered by a liberal allowance of fairly paid furlough. No man need enter the I M S now a days expecting to make his fortune, though, using the word fortune in a moderate sense, even in recent times some few men may be said to have done so. The days of great fortunes to be made in Indian service, such as Joseph Hume's £40,000 in twelve years as an Assistant Surgeon, have gone long ago, and gone for ever. Even a century ago, fortunes were usually made, not by practice, but by trade and contracts. A man who enters the I M S should do so with a mind made up not to waste his time and his energies in futile regrets that the career he has deliberately chosen involves service abroad instead of at home, nor grudgingly to compare his own position and prospects with those of the most successful of his contemporaries in England while he forgets those who have failed to attain success, or who have hopelessly gone under, but to take the rough with the smooth, to worry through hard times in hope of the better times which are sure to come, sooner or later, and to do his best for the country, for its inhabitants, and for the Government as well as for himself. He will find open to him a career with plenty of interesting work, not always hard work, pay at once sufficient to maintain him as a bachelor, and sufficient in a few years to enable him to marry,* pay steadily increasing as his length of service, and, if married his necessary expenses increase, some provision for his family if he falls by the way, and finally a pension, in its earlier stages sufficient to live upon while he gets his footing, if he makes up his mind to retire early, before he is too old to start on a new career, in its later stages, if he prefers to hold on in the service, sufficient to maintain him in comfort after retirement.

Service Notes

THE following revised rules for the grant of Specialist pay to officers of the Royal Army Medical Corps and the Indian Medical Service are published in Indian Army Orders—

(1) Specialist pay is an allowance to officers below the rank of Lieutenant Colonel for special sanitary, surgical, or medical work done for the State, which it is not in the power of the ordinary medical officer to perform with the same efficiency as the specialist. It will not be a personal allowance but will be granted only to the incumbents of certain specified appointments when actually in a position to perform the duties connected therewith.

The allowance is admissible to an officer during (a) recreation or temporary leave, and (b) privilege leave (whether taken alone or as part of combined leave) up to a limit of 60 days. It is inadmissible during any other kind of leave.

* It is possible for a man to marry on his pay when he first joins but usually to do so, without private means involves a struggle, and considerable discomfort. In what other profession would a man ever expect to get pay or income sufficient to justify him in marrying on first starting?

(2) Indian Medical Service officers in civil employment are not eligible for employment as specialists.

(3) The services of specialists are absolutely at the disposal of Government in any way they may direct, without further claim for remuneration.

(4) The duties of all specialist appointments must be carried out in addition to ordinary hospital work.

(5) No officer shall hold more than one specialist appointment at the same time.

APPOINTMENTS

(6) There will be 105 specialist appointments in India, each carrying pay at Rs 60 a month, the special subjects for which this allowance is granted and the number of each class being shown in the subjoined table. Of these 55 will be allotted to the Royal Army Medical Corps, and 50 to the Indian Medical Service in military employment.

Selections for appointments and the distribution throughout the several divisions and brigades will be made under the orders of His Excellency the Commander in Chief, and notified in India Army Orders, the guiding principle, however, being that officers will be located in those stations where their services are likely to be of the greatest utility to the army.

SPECIALIST APPOINTMENTS

(a)—Prevention of disease—including parasitology, bacteriology and preventive inoculation)	40
(b)—Dermatology—including the prophylaxis treatment of, and instructional measures in connection with venereal diseases)	10
(c)—Advanced operative surgery	20
(d)—Ophthalmology	10
(e)—Electrical science—including skiagraphy)	10
(f)—Mental science	2
(g)—Otology, laryngology and rhinology	3
(h)—Midwifery and diseases of women and children	10
Total	105

QUALIFICATIONS

(7) Officers of the Royal Army Medical Corps in India will be eligible for appointment as specialists under the qualifications laid down by the Army Council.

(8) Should, however, there not be a sufficient number of these officers holding the above qualifications in (b), (c) and (e) available in this country, the Principal Medical Officer, His Majesty's Forces in India, will decide as to the eligibility of any officer being appointed a specialist in India in these subjects his decision being based on the certificates of a recognized institution or the reports of Administrative Medical Officers which should be based on personal knowledge of the individual recommended.

Similarly the Principal Medical Officer, His Majesty's Forces in India, will decide as to the advisability of any officer being appointed a specialist in prevention of disease for preventive inoculation work only. Such qualifications will only be recognized as long as the officer is on the Indian establishment.

(9) On the occurrence of vacancies in any of the cases provided for in rule (8), the claims of fresh arrivals in India holding the qualification referred to in (7) will receive the first consideration.

(10) The eligibility of an officer of the Indian Medical Service as a specialist will be decided by the Director General, Indian Medical Service, whose conclusion will be based either on certificates of a recognized institution, or by examination of the candidate.

(11) All officers before being appointed specialists in (e) will be required to go through a course of Skiagraphy at the Delia Dun school, the object being to enable them to become thoroughly acquainted with the apparatus used in India and its working under field service conditions.

IN paragraph 3 of the Home Department (Jails) Resolution Nos 180—192, dated the 28th September 1905, it was announced that the new scale of consolidated pay sanctioned by the Secretary of State for India for officers of the Indian Medical Service employed in the Jail Department should be introduced with effect from the 1st April 1904, that officers already in the department should be permitted to choose between the old and the revised scale and that when the present pay of an officer choosing the new scale was in excess of that laid down in paragraph 2 of the Resolution, he might continue to draw the pay which he then received under the old scale, until he became entitled to an increase under the

revised scale, by which his emoluments would thereafter be regulated

2 It has been found in practice that the interests of existing incumbents have not been sufficiently safeguarded by these orders, and that the conditions prescribed have operated very unequally in different cases. The Government of India accordingly addressed the Secretary of State on the subject in March 1907. They have now received his orders and are pleased to notify, in supersession of the previous orders on this point, that any officer who was in the department on the date from which the improved rates of pay came into effect, i.e., the 1st April 1904, will be permitted to select the date, if any, on which he will come under the new scale, that such election may be made at any time, and when made shall be final.

3 The Government of India are further pleased to extend this concession to officers who, although not confirmed in the department on or before the 28th September 1905, had already joined it on probation.

The above is a generous recognition of an admitted grievance.

In accordance with India Army Order No. 217 of 30th May 1907, the Commander in Chief in India is pleased to make the following temporary appointments from the dates on which the officers assume charge—

Sanitary Officers

Captain H. A. Davidson, R.A.M.C., 1st (Peshawar) Division
Major B. H. Scott, R.A.M.C. 2nd (Rawal Pindi) Division
Lieutenant Colonel J. R. Forrest, R.A.M.C., 3rd (Lahore) Division
Lieutenant Colonel R. L. R. Macleod, R.A.M.C., 4th (Quetta) Division
Lieutenant Colonel H. P. G. Elkington, R.A.M.C., 5th (Mhow) Division
Lieutenant Colonel J. Meek, R.A.M.C., 6th (Poona) Division
Captain P. S. Lolean, R.A.M.C., 7th (Meerut) Division
Major J. C. Moigan, R.A.M.C., 8th (Lucknow) Division
Major G. Raymond, R.A.M.C., 9th (Secunderabad) Division
Captain J. H. Brunskill, R.A.M.C., Burma

In connection with the Army Reorganization Scheme the following officers have been appointed Staff officers for Medical Mobilization Stores sub *pro tem*—1st Division—Major W. H. Ogilvie, I.M.S., 2nd Division—Major L. P. Moore, R.A.M.C., 3rd Division—Lieutenant Colonel M. A. Ker, I.M.S., 4th Division—Major H. F. Whitchurch, I.C., I.M.S., 6th Division—Captain J. F. Martin, R.A.M.C., 8th Division—Major F. W. Gee, I.M.S., 9th Division—Major A. E. Milner, R.A.M.C. Officers will be detailed for the 5th and 7th Divisions at a later date.

The following promotions are made, subject to His Majesty's approval—

Senior Assistant Surgeon and Honorary Lieutenant William Bailhe George (*seconded*), to be Senior Assistant-Surgeon and Honorary Captain (*seconded*),

Senior Assistant Surgeon and Honorary Lieutenant Cajetan Maria DeSouza, to be Senior Assistant Surgeon and Honorary Captain,

First class Assistant Surgeon Joseph Amor, to be Senior Assistant Surgeon and to have the honorary rank of Lieutenant,—

Vice Senior Assistant Surgeon and Honorary Captain I. Chaves, retired, with effect from the 16th June 1907.

On his return from leave Lieutenant Colonel R. H. Castor, I.M.S., was placed temporarily on special duty in connection with plague at Rangoon, in place of Captain R. D. Saigol, M.B., I.M.S., transferred.

UNDER the provisions of Articles 260, 316 and 233 of the Civil Service Regulations privilege leave for three months and leave to Europe on urgent private affairs for three months in continuation thereof is granted to Captain A. W. Greig, I.M.S., with effect from the date on which he availed himself of the privilege leave.

LIEUTENANT COLONEL R. H. CASTOR, I.M.S., is appointed to officiate as Superintendent of the Rangoon Central Jail in place of Captain A. W. Greig, I.M.S., proceeding on leave.

WITH reference to General Department Notification No. 170, dated the 27th May 1907, it is hereby notified that Singapore has ceased to be an infected port for the purposes of the Venice Sanitary Convention of 1897 and of the rules framed under section 2 of the Epidemic Diseases Act 1897 to guard against the importation of plague, and to provide for the medical inspection, isolation, observation and surveillance of persons suffering from, or suspected of being infected with, plague into and in ports in Burma.

IN accordance with Rule 1 of the rules to guard against the importation of plague published in this Department Notification No. 204, dated the 7th October 1897, as subsequently amended Captain R. D. Saigol, M.B., I.M.S., is appointed to perform the duties of Health Officer of the Port of Moulmein.

MAJOR T. W. A. FULLERTON, I.M.S. was, while at home, on study leave from 22nd November 1906 till 20th May 1907.

We regret to learn of the sudden death from blood poisoning of this well known officer.

CAPTAIN F. O. N. MELL, I.M.S., Superintendent of the Central Jail, Nagpur, is granted combined and study leave for one year, four months and twelve days from 8th July, temporary arrangements have been made to carry on the work of the jail.

THE King has approved of the retirement of Lieutenant-Colonel O. H. Channer, M.B., from 15th April, Major W. E. A. Armstrong, I.M.S., from 12th March, and Lieutenant Gill, I.M.S., from 27th March 1907.

THE following changes have been approved and the necessary corrections will in due course be made to Army Regulations, India, Volume II—

I—Hospital Assistants are not required to fire a revolver course, revolvers will not therefore be issued to them either in cantonments or on active service.

Any revolvers in charge are to be withdrawn.

II—Hospital Assistants appointed to Native Cavalry regiments are to be specially selected men, active and strong, with an aptitude for riding. They will, unless Commanding Officers are satisfied with their qualifications, undergo a simple course of equitation in the regiment at the earliest opportunity.

III—Stretcher drill in Native Cavalry regiments is abolished, but "first aid" will continue to be taught as at present.

MAJOR C. R. STEVENS M.D., F.R.C.S., I.M.S. (Bengal), is appointed to be Professor of Surgical and Descriptive Anatomy in the Medical College, Calcutta, and *ex officio* Surgeon to the College Hospital, with effect from the date on which he assumes charge of his duties.

THE services of Captain C. A. F. Hingston, I.M.S., are placed temporarily at the disposal of the Government of Madras.

LIEUTENANT R. D. MACGREGOR, I.M.S., is appointed on special duty in the Port Health Department, Rangoon.

MILITARY ASSISTANT SURGEON W. R. BENNETT is appointed Civil Surgeon of Meigai District, vice Dr L. Fink, transferred.

THE following is from the Punjab Government Resolution on the hospitals of that province—

"The surgical record of the year was very exceptional with 192,643 operations the largest number yet recorded in the province. The Officiating Lieutenant Governor is glad to have the opportunity of recognizing the admirable work in this direction performed by Major H. Smith, I.M.S. whose skill and reputation as a surgeon attract to Jullundur very large numbers of patients from all over Northern India."

MAJOR W H OGILVIE, I M S, has taken over the duties of Civil Surgeon, Jhelum, relieving Captain R A Lloyd, I M S

MILITARY ASSISTANT SURGEON R J OWEN, I S M D, has been appointed Civil Surgeon of Rohtak District, Punjab

CAPTAIN T F OWENS, I M S, acted as Civil Surgeon of Jacobabad in addition to his own duties from 3rd June 1907

His Excellency the Governor of Bombay in Council is pleased to make the following appointments—

Major S E Prall, M B, B S, I M S, to act as Port Surgeon, Aden, and in Medical charge, European General Hospital, Aden, *vice* Lieutenant Colonel C Monk, I M S
Major E G R Whitcombe, I M S, to act as Civil Surgeon, Aden, in addition to his own duties, as a temporary measure
Lieutenant B Falk, M B, I M S, to act as Civil Surgeon, Satala, in addition to his own duties, *vice* Lieutenant Colonel C F Willis, M D, I M S, as a temporary measure

MAJOR C Y C HUNTER, I M S, was granted one month and 16 days' privilege leave, and Lieutenant Colonel W A Quayle, I M S, acts in medical charge and Mr P N Greany in executive charge of the Jubbulpore Central Jail

LIEUTENANT COLONEL W VOST, I M S, Civil Surgeon, Muttra, U P, was granted one month's privilege leave from 25th July

CAPTAIN C A SPRAWSON, I M S, acts as Deputy Sanitary Commissioner, United Provinces, and Captain C Biodribb, I M S, officiates as Civil Surgeon of Jhansi, in addition to his military duties

As we go to press we learn with great regret of the death from Enteric Fever of Major Whitchurch, V C, I M S, whom we saw only a few weeks ago in apparent good health in Simla. We shall publish an account of this officer's career in our next issue

LIEUTENANT COLONEL F J CRAWFORD, I M S, Madras, has been granted combined leave up to 20th February 1908

LIEUTENANT COLONEL E W REILLY, I M S, has been permitted to retire from 18th July 1907

CAPTAIN D N ANDERSON, I M S, Civil Surgeon, C P, has been granted four months' extension of furlough

THE services of Lieutenant Colonel C Monk, I M S, and Lieutenant Colonel C F Willis M D, I M S, are placed temporarily at the disposal of H E the Commander in Chief, with effect from 7th July 1907 and 24th June 1907 respectively

CAPTAIN J H MURRAY, I M S, is appointed Superintendent of the Cellular and Female Jails and Civil Surgeon, Port Blair

MAJOR W E SCOTT MONCRIEFF, I M S (Bengal) an Agency Surgeon of the 2nd class, is posted as an Agency Surgeon in Kotri and Jhalawar

MAJOR R C MACWATT, I M S (Bengal), an Agency Surgeon of the 2nd class, is posted as Residency Surgeon in the Western States of Rajputana

CAPTAIN J W WATSON, I M S, an Agency Surgeon of the 2nd class, is granted privilege leave for three months combined with furlough for nine months, with effect from the 5th April, 1907, under Articles 233 and 308 (b) of the Civil Service Regulations (Notification No 1465 G, dated the 23rd May 1907, is hereby cancelled)

THE 57th Annual Report of the Committee of the East India United Service Club, 16, St James' Square, London, is a very satisfactory one, the balance of assets over liabilities is no less than £27,200 in favour of the Club, the number of members amount to 1,669. A new feature which will be very useful to men on leave when in London, will be the proposed block of residential chambers in Duke Street, which it is

proposed to build next year. I M S officers at home on leave will find this Club very comfortable and central, and so many men in the Indian Service join that one is always sure of meeting persons one knows

MAJOR A COLIMAN, I M S, has been appointed Civil Surgeon of Mooltan

CAPTAIN J G SWAN, I M S, is appointed to be Civil Surgeon of Shahpur, Punjab

CAPTAIN S H LEI ARBOLE, I M S, assumed charge of his duties as Assistant Plague Medical Officer, Lahore, on 22nd May

MAJOR C B PRALL, I M S, Superintendent, Central Jail, Lucknow, got one month's leave from 28th June, and Lieutenant Colonel Pratt, I M S, Civil Surgeon, held charge in addition to his other duties

LIEUTENANT I M MAHAR, I M S, is appointed to officiate as Superintendent of the Presidency Jail, Calcutta, *vice* Major J Mulvany, I M S, on deputation

CAPTAIN H BOULTON, I M S, took over charge of Civil Medical duties of Bunn District on 9th July, relieving Captain F W Sumner, I M S

ON transfer from Bengal, Captain R M Dalziel, I M S, is posted as Superintendent, Central Jail, Mooltan

THE services of Captain W Gillit, M B, I M S, are placed temporarily at the disposal of the Bengal Government for employment in the Jail Department. He has been appointed Acting Superintendent of the Midnapore Central Jail, *vice* Captain Dalziel, transferred to the Punjab

ASSISTANT SURGEON GOBAL CHANDRA CHATTERJEE, M B, of the Dacca Medical School, has been made a Rai Bahadur, as a personal distinction

THE King has approved of the transfer to the temporary half pay list of Captain S R Douglas, I M S, dated 15th September 1905, and Captain H B Merkin, dated 23rd March 1907

CAPTAIN F P MACKIE, M B, F R C S, I M S, Assistant to the Director, Bombay Bacteriological Laboratory, was on privilege leave of absence for three months from the 30th March 1907

CAPTAIN T H GLOSTER, I M S, held charge of Captain Mackie's appointment from the 30th March 1907 to the 20th April 1907, both days inclusive, in addition to his own duties under the Sanitary Commissioner with the Government of India, and acted for Captain Mackie during the remaining period of that officer's absence

THE services of Major W S P Ricketts, M B, I M S, are placed temporarily at the disposal of the Government of India from the date of relief

MAJOR S EVANS, M B, I M S, has been followed by His Majesty's Secretary of State for India, an extension of furlough on medical certificate for two months

COLONEL C H BEATSON, I M S, P M O of the Kohat Brigade, has been made Companion of the Bath

CAPTAIN H B STEEN, I M S, has been appointed Civil Surgeon of Sylhet

MAJOR W S P RICKETTS, I M S, has joined the Foreign Department

CAPTAIN A C INGRAM, I M S, has joined the Jail Department, C P, and is posted to the charge of Nagpur Central Jail

LIEUTENANT PROCTOR, I M S, has joined the Punjab Jail Department

THE services of Captain A. Miller, M.P., I.M.S. (Madras), are placed temporarily at the disposal of the Government of Bombay for employment in the Chemical Examiner's Department.

LIEUTENANT COLONEL D. SEMPLE, M.D., R.A.M.C. (retired), Director of the Central Research Institute, Kasauli, is granted privilege leave for two months with furlough out of India for four months in continuation, with effect from the 18th July 1907.

CAPTAIN E. D. W. GREIG, M.B., I.M.S. on special duty at the Central Research Institute, Kasauli, is appointed to officiate as Director of the Institute during the absence on leave of Lieutenant Colonel D. Semple, M.D., R.A.M.C. (retired) or until further orders.

On the termination of his special duty as Civil Surgeon at Pichmuh, Captain A. M. Fleming is transferred as Civil Surgeon to Chanda, C.P.

MAJOR C. L. WILLIAMS, I.M.S. is permitted to retire with effect from 19th March 1907.

THE following appointments and transfers dated the 18th July 1907, are ordered in the Burma Civil Medical Department—

Lieutenant R. D. MacGregor, I.M.S. who has been placed on special duty in the Port Health Department, Rangoon, is appointed to act as Port Health Officer, Rangoon, in place of Captain L. Gilbert, M.B., I.M.S., transferred.

On relief by Lieutenant MacGregor, Captain L. Gilbert, M.B., I.M.S. is posted to the Civil Medical charge of the Southern Shan States in place of Major F. J. Dewes, I.M.S., transferred.

On relief by Captain Gilbert, Major F. J. Dewes, I.M.S., is posted to the Civil Medical charge of the Shwabo District, in place of Major Kanta Prasad, M.B., I.M.S., proceeding on leave.

Under the provisions of Articles 260, 308 (b) and 233 of the Civil Service Regulations, privilege leave for three months combined with furlough to Europe for nine months is granted to Major W. G. Pridmore, I.M.S. with effect from the date on which he may avail himself of it.

Captain H. H. G. Knapp, M.A., M.D., I.M.S. Superintendent of the Central Jail at Mandalay, is appointed to hold collateral charge of the Civil Surgeoncy at Mandalay in place of Major W. G. Pridmore, I.M.S., proceeding on leave.

CAPTAIN H. EMMETT SMITH, M.I., is attached to the Chemical Examiner's Department, Calcutta, as a probationer.

THE services of Captain T. G. N. Stokes, M.B., I.M.S. and of Captain J. C. S. Oxley, I.M.S., are placed permanently at the disposal of the Government of the Central Provinces and the services of Captain W. S. McGilivray, M.L. are placed temporarily at the disposal of the same Administration.

LIEUTENANT COLONEL SIR J. FAIRFAX, BART., I.A.M.C. (son of the late Sir Joseph) has been appointed Medical Officer to the newly formed Union Jack Club, London.

THE following I.M.S. officers are promoted to be Majors from 29th July 1907—

Asher Leventon
Phillip Francis Chipman, M.I.
Alfred Hooton
Arthur Frederick William King
Robert Frazer Standage
Andrew Armstrong Gibbs
Frederick Linton Blenkinsop, M.I.
Henry Alfred Forbes Knappton
Thomas Edgar Watson, M.B.

MAJOR HENRY SMITH, I.M.S., of Jullunder, received one month and nine days' leave, with effect from 15th July 1907.

MILITARY ASSISTANT SURGEON W. C. L. DEKES, Civil Surgeon of Gujrat, has received three months' privilege leave from 9th July 1907.

CAPTAIN G. I. DAVIS, I.M.S. Assistant Plague Medical Officer, Amritsar, has been transferred in same capacity to Simla.

LIEUTENANT I. M. MACRAE, I.M.S., has taken over charge of the Presidency Jail, Calcutta, vacated by Major Mulvaney, I.M.S., on deputation.

CAPTAIN J. FLEMING BARNARDO, I.M.S., has left Bhagalpore, and is posted to the Eden Hospital, Calcutta.

IT is notified that the Government of India have approved of military hospital assistants of the Indian Subordinate Medical Department wearing the letters "S.M.D." on their shoulder straps.

MAJOR W. MOLESWORTH, I.M.S., Surgeon to His Excellency the Governor of Madras, is due out from eight months combined leave on 5th November.

CAPTAIN W. J. NIBLOCK, I.M.S. leave will end on 30th November.

CAPTAIN C. B. HARRISON, I.M.S., got two years' combined leave and is not due to return to Madras till 9th June 1909.

CAPTAIN A. MILLER, I.M.S., has been transferred to Karachi.

CAPTAIN W. C. LONG, I.M.S., got six weeks' privilege leave up to 25th August 1907.

CAPTAIN J. P. CAMFFON, I.M.S., of Jail Department, Madras, was granted six weeks' privilege leave from date of relief.

THE Non Memorial Fund is getting on well and subscriptions have been received from all classes of the community. Well over Rs. 4,000 have been subscribed as we go to press.

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscriptions to the *Indian Medical Gazette*, Rs. 12, including postage in India. Rs. 14, including postage, abroad.

BOOKS, REPORTS, &c., RECEIVED—

Alexis Thomson's *Surgery*, Vol. II. Young J. Pontland
The Puerperium. C. N. Longridge. Adlor & Co.
The Treatment of Skin Disease. (Baillière, Tindall & Cox.)
Dictionary of Medical Diagnosis. McKissock. (Baillière, Tindall & Cox.)
Alcohol and the Human Body. Sir A. Horsley and Miss Sturge. (Macmillan & Co.)
Folia Therapeutica, Pts. 1, 2, 3. (Bale Sons & Danielson.)
The Effective Treatment of Hip Disease. Bennie. (Baillière, Tindall & Cox.)
The Punjab Hospitals Report, 1906.
The Assam Hospitals Report.
The U.P. Hospitals Report.
The Bengal Hospitals Report.
The Bengal Sanitary Report.
The Madras Sanitary Report.
The Burma Hospitals Report.
The Burma Sanitary Report.
H. Campbell's Treatment.
The Assam Vaccination Report.
The Punjab Jails Report.
The Bengal Jails Report.

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM—

Capt. Standage, I.M.S., London. Capt. Kenrick, M.S., Jhansi. Major Henry Smith, I.M.S., Simla. Lt. Col. Leslie, I.M.S., Simla. Major Jennings, I.M.S., Bombay. Capt. Moses, I.M.S., Barisal. Lt. Col. Morris, I.M.S., Murree. Dr. Brannach, Calcutta. Dr. Sakhadkar, Calcutta. Dr. Fink, Burma. Capt. McGay, I.M.S., Calcutta. Capt. Wells, Bueilly. Dr. Brachio, Daltongunge. Capt. Cook Young, I.M.S., Dehra Dun. Capt. Spenser, I.M.S., Jhansi. Capt. MacWaters, I.M.S., Simla. Capt. Franklin, Persia.

Original Articles.

CATS AS PLAGUE PREVENTERS

A REPORT ON THE CAT CENSUS IN THE AMRAOTI DISTRICT

By ANDREW BUCHANAN, M.D.,

LT COLONEL, I M S.,

Civil Surgeon, Amraoti

IT is about nine months since my attention was first drawn to the possibility of preventing plague by keeping cats. In a pamphlet on Plague Prevention, which was published by the *Pioneer Press* in January last reference was made to a small village called Airla, which is on the road side between Nagpur and Kalmeshwar. At the two latter places many people had died from plague, but Airla had always remained free. The Head man of the village when asked if he could explain why his village was free from plague although people from infected towns had frequently passed through it, said that there were many cats in the village and no rats. Traps were put down in the village and kept there for several days, and only four rats were caught. He explained that the reason why there were so many cats was because there were many buffaloes and the cats were attracted by the milk. Enquiries were made at other villages, first in the Nagpur District and afterwards in the Amraoti District, and it was found that it was the rule that where there were many buffaloes there were many cats and there was seldom any case of plague.

CAT CENSUS

In the Amraoti District during the past plague season there have been 5,177 deaths from plague. An endeavor has been made to find out whether the cat has had any influence in keeping plague away from any of the towns or villages, and second, to find out whether the number of cats is sufficient to justify the hope that plague can be prevented by cats. There are 15 towns or cities in which there are dispensaries. In most of these steps were taken to remove the rats by traps and poison, so the evidence regarding the value of the cat is not as clear in the towns as it is in the villages. There is, however, a good deal of evidence available in the towns when we compare houses in which cats were living with houses in which there were no cats. The number of cats in 14 towns and cities is 5,155. (The figure from Ellichpur City has not been received)

of cats to houses. Afterwards from the Vital Statistics Returns the number of deaths from plague in each village was entered. It was then noticed that in the villages where the cat percentage is high, there were very few cases of plague, and that most of the plague cases occurred in the villages where the cat percentage is low. Where the cat percentage is 50, that is an average of one cat to two houses, plague will not occur. In the table given below there is one exception to this rule. A village Wandl, was reported to have 61 per cent of cats and yet 13 cases of plague occurred. Special enquiries were made in this village and it was found that many of the cats had been introduced after plague had occurred. There were 13 houses with cats before the plague began and no case occurred in any of these houses.

ANALYSIS OF CENSUS IN VILLAGES

The villages have been divided into three groups: those with less than 20 per cent of cats, those with from 20 to 50, and those with over 50 per cent. The results are summarized in the statement given below. It shows that there is a large number of cats in most of the villages. Of 1,017 villages from which reports have been received 660 or 65 per cent have more than 20 per cent of cats. The total number of cats in the villages is over 28,000. It will also be noted that in every taluq we find most of the plague cases in the villages with less than 20 per cent cats and the villages with over 50 per cent cats are free from plague. The exception referred to is in the Amraoti Taluq. In this village we have an illustration of a very important fact, viz., that since the people have begun to realize that cats prevent plague, there has been a great demand for cats and many people now keep cats who did not keep them before.

HOUSES WITH CATS COMPARED WITH HOUSES IN WHICH THERE WERE NO CATS

While there is thus evidence that a village with many cats will not suffer from plague, there is also evidence that when plague occurs, the houses in which cats were present usually escape plague. One policeman cannot be expected to guard against 40 thieves and one cat cannot keep away swarms of rats so there are exceptions to the rule that the house with a cat escapes plague. Some difficulty has been experienced in carrying out this part of the investigation owing to the fact that there are many wandering cats that have no particular house as their home. In the more recent investigations this difficulty has been overcome by dividing the houses into three groups: houses with cats, houses without cats, houses into which cats come occasionally. The investigations were carried out in towns and villages

NAME OF TALUQ	UNDER 20 PER CENT			20 TO 50 PER CENT			OVER 50 PER CENT			Total number of Cats
	No of villages	No of infected villages	No of plague cases	No of villages	No of infected villages	No of plague cases	No of villages	No of infected villages	No of plague cases	
Amraoti	57	7	665	108	5	34	50	1	13	6,759
Chandur	84	8	385	128	2	23	27	1	1	7,653
Daryapur	84	38	2,040	123	28	470	33			5,927
Mora	82	2	30	82	5	21	21			5,850
Ellichpur	50	4	138	73	1	2	15			2,646

CENSUS IN VILLAGES

In Bejar the Patel or Headman in a village is accustomed to prepare statistics of various kinds, and Major Horsburgh, the Deputy Commissioner, very kindly got these men to prepare statements showing the number of cats in their villages. The Tahsildar in each taluq had lists prepared showing the name of the village, the number of houses, the number of cats in the village, and from these figures were calculated the percentage

in which plague has recently been prevalent. The following are a few examples of reports which have been received. In Chandur Bazar — In 38 houses with cats there were 5 cases of plague, while in 27 houses without cats there were 26 cases. In Talegaon (Circle No 4) — In 27 houses with cats there were 7 cases while in 12 houses with no cats there were 15 cases. In Circle No 1 of the same town — In 23 houses with cats there were 7 cases, while in 12 houses with no cats there were

15 cases The Tahsildar of Morsā had an investigation made in Posla, a town of over 4,000 inhabitants, and reports that "in only two houses where there were cats three cases of plague occurred All the remaining cases (67 in number) occurred in houses in which there were no cats I am therefore of opinion that cats are the best disinfectants (*sic*) and your theory that the houses where there are cats will have no plague is correct"

An investigation made in Rajapet, a part of Amraoti City, shows that —

	No of houses	Number of cases of plague
With cats	40	1
Without cats	67	31
Cats occasionally	15	9

Hospital Assistant Kesheo Ramchandra found in two blocks of houses in Anjangaon —

	1st block		2nd block	
	No of houses	Cases	No of houses	Cases
With cats	9	3	13	5
Without cats	10	16	14	16
Cats occasionally	13	14	14	6

TEST OF THE VALUE OF A PLAGUE PREVENTION MEASURE

The value of a plague prevention measure depends on four things 1st, whether it is effective 2nd whether it strikes at the root of the disease 3rd, whether it is available and 4th, whether it is acceptable to the people There is now not the shadow of a doubt that the rat is the cause of plague epidemics, and no evidence is required to convince most people and especially the natives of this country that the best way to get rid of rats is to keep cats Even if isolation, disinfection and inoculation were of much value, they do not strike at the root of the disease Rat destruction by traps and poison are troublesome and costly though effective if the staff employed on this work are continuously energetic, but the cat requires no stimulus

That the cat is available or can soon be made available in sufficient numbers in this district is clear from the census that has recently been taken and from the fact that there is the greatest willingness on the part of the people to obtain young cats and keep them

The strongest point in favour of the cat is the fact—a fact which very few Europeans in this country know—that it is almost a religious duty with a Mahomedan to keep a cat and that Hindus consider it a great sin to injure even a single hair of a cat It is now recognized that the success of measures for plague prevention depends very greatly on the attitude of the people towards it The strongest point in favour of recommending the keeping of cats is that any prejudice that is likely to be met with is in favour of and not against the keeping of cats, excepting in the case of the Bhowan Diers and a few Jains (and their numbers are not large) It is clear then that the cat is effective, that it strikes at the root of the disease, that in this district it is available and that it is acceptable to the people During the past ten years I have seen many measures introduced for plague prevention To all there has been more or less opposition To the keeping of cats there is practically no opposition and it is clear that the keeping of cats is *par excellence* the people's remedy for plague prevention

THE "BREEDING SEASONS" OF RATS AND THE EPIDEMIOLOGY OF PLAGUE IN CALCUTTA

By H M CRAKE, M.B. (VICT),

District Medical Officer, Calcutta

THE following observations, based on the actual dissection of over 3,500 rats, seem worth recording particularly, as no investigation into this question has been carried out in India, as far as I am aware My rough notes in the appendix to the Annual Report on Plague, 1905-6,¹ based as they were on the percentage of young rats brought to the Rat Destruction Reports, can hardly be regarded as a serious contribution to the study of this subject

Liston,² referring to this question, says "rats do breed to some extent all the year round, but I have a strong impression that in the state of nature there is a season when more young rats are found than at any other season, and that season in Bombay is precisely the plague season"

Gotschlich,³ who examined 6,500 rats in Alexandria in 1901-2, found that the percentage of pregnant females was 5 per cent in December, 3 per cent in March, 12 per cent May to June, and 5 per cent in July (expressed as percentages of total number of rats captured)

The plague epidemic began in May, reached its height in June, and fell rapidly towards the end of July Apparently it is not stated what species of rats were examined

It is to be regretted that the results were not expressed as percentages of the females examined, as obviously variations in the proportions of the sexes would influence them to a very considerable extent

The rats of Calcutta, as Hossack⁴ has shewn, comprise four varieties *Mus rattus* or the long-tailed rat, *Mus decumanus* or the big brown rat, *Nesokia bengalensis* or the Indian mole rat, and *Nesokia nemonavagus* or bandicoot

The last-named, though not so excessively rare as my earlier observations seemed to show, was found in such comparatively small numbers and at such irregular intervals that I have not been able to determine its breeding season A series of 40 females examined shewed 17 per cent pregnant Of the remaining three classes *N. bengalensis* is by far the most common in the native quarter of the city

In *kutchā* grain-godowns they swarm in thousands. *M. decumanus*, the next variety in order of frequency, has undergone a very marked alteration in its habits, largely owing to local conditions In Calcutta at all events, as I shewed last year,⁵ it is to a very large extent a house-rat

M. rattus, the least frequent of the three common varieties, is here, as elsewhere, almost invariably a house-rat In other words, all Calcutta rats are possible factors in disseminating

TABLE I.

TABLE 1.

NESOKIA BENGALENSIS				MUS DECUMANUS			MUS RATTUS		
Months	No of females examined	No of pregnant	Percentage of pregnant	No of females examined	No of pregnant	Percentage of pregnant	No of females examined	No of pregnant	Percentage of pregnant
			%			%			%
August	79	30	37.9	51	8	15.6	31	4	12.9
September	67	25	37.3	55	4	7.2	57	20	35.1
October	84	38	45.2	74	15	20.2	88	32	36.3
November	100	31	31	63	11	17.4	60	9	15
December	100	36	36	100	29	29	100	18	18
January	243	101	41.1	67	12	17.9	97	21	21
February	178	65	36.5	101	26	25.7	96	24	25
March	225	45	20	170	29	17.05	130	28	21.5
April	190	29	15.2	66	10	15.1	42	Nil	Nil
May	171	11	6.4	50	9	18	19	Nil	Nil
June	110	20	18.1	62	9	14.5	38	5	13.1
July	285	132	46.3	50	8	16	60	6	10
TOTAL	1,83	593	32.3	909	170	18.7	846	167	19.7

plague, as we have not a single species of rat which is not more or less intimately associated with man. Hence it was necessary to examine specimens of each variety month by month and tabulate the results separately. The above and following tables show the number of female rats examined each month, and the number found pregnant, the latter figures being also expressed as percentages —

TABLE II
All varieties combined

Month	Total females examined	Total found pregnant	Percentage of pregnant
			%
August	161	42	26
September	207	49	23.6
October	246	85	34.5
November	223	51	22.8
December	300	83	27.6
January	407	134	32.9
February	375	115	30.6
March	525	102	19.4
April	298	39	13
May	240	50	20.8
June	210	34	16
July	395	146	36.9
TOTAL	3,587	930	25.9

The following points are clearly shewn —

1 Rats breed more or less the whole year round, the average percentage of pregnant females amounting to over 25 per cent. This is particularly marked in the *N. bengalensis*, fully one-third of the females being pregnant during seven months of the year. Similarly in *M. decumanus*, about one-sixth of the females are pregnant throughout the year. *Mus rattus* on the other hand appears to have a short off season lasting two months in April and May (unfortunately, the number examined during this period was very small, as great difficulty was experienced in securing specimens).

2 The period when rats breed most freely, appears to be October. (The figures for July,

though slightly bigger, are almost entirely due to the prolific *N. bengalensis*.)

This is most definitely marked in *M. rattus*, the percentage of pregnant females for the remainder of the year shewing a very decided drop.

In *N. bengalensis* on the other hand, the proportion of pregnant females is markedly increased at three seasons of the year, i.e., October, January and July. In fact, beyond pointing out that from July to February, from 31 to 46 per cent of the females examined were pregnant as compared with from 15 to 23 per cent during March to June, one can only record the fact that they breed all the year round.

Similarly in *M. decumanus* the figures for December and February shew an increased tendency to breeding, therefore the rest of the year so closely approximates to the average that there is obviously no breeding "Season".

Expressed graphically, the percentage of pregnant females shews the following —

I For all rats — Sudden rise in October followed by equally sudden fall in November. Then slight gradual rise in December, January and February followed by sudden decline.

This in turn is followed by gradual rise in May and June, culminating in a sharp rise to the maximum in July.

II For *N. bengalensis* — The curve maintains a high level from August to February, fluctuating in October and November. In March a marked drop occurs, lasting till June. In July rapid rise occurs, exceeding high percentages of October and January.

III *M. decumanus* — Slow fluctuating rise to December followed by similar fall.

IV *M. rattus* — Very pronounced rise to maximum in October, followed by equally marked drop. Then slow gradual rise, reaching its height in February, followed by sudden fall to zero. Comparatively insignificant rise in June and July.

So far crude figures have been dealt with. A valuable check on the conclusions arrived at above is available, if the relation of the maximum monthly percentage to the average monthly percentage is considered.

In the case of *N. bengalensis*, the average percentage of pregnant females is 32.3, and the maximum 46.3, the difference amounting to 14 per cent of the average. As the October returns represent an excess of nearly 40 per cent, the difference, though considerable, is of little value.

In *M. decumanus* the average percentage is 18.7, the maximum 29, the difference amounting to 55 per cent of the average.

Mus rattus with an average of 19.7 and a maximum of 36.3 shows a marked difference, amounting to 84 per cent of the average.

Such an investigation as this would be obviously incomplete unless the number of embryos found in the different species of rats was not carefully noted.

In *N. bengalensis* the number varied from 1 to 9, the average being a fraction over 6.

In *M. decumanus*, the number of embryos varied from 2 to 11, the average being 6.3.

In *M. rattus*, they varied from 2 to 6, the average being 4 (nearly). This is just what was to be expected, the large *M. decumanus*, the medium sized *N. bengalensis* and the small *M. rattus*, producing embryos in numbers related to their size.

From this it is quite clear that *N. bengalensis* is by far the most prolific rat in Calcutta, each 100 females producing on an average 187 young, *M. decumanus* produces an average of 112, whilst *Mus rattus* only produces 67, practically one-third the number produced by *N. bengalensis*.

Though most numerous and most prolific, *N. bengalensis* is not quite so intimately associated with man as the other varieties of rats. That is to say, the relative importance of the different varieties from an epidemiological point of view is not a mere arithmetical progression. As I shewed last year,⁶ *M. rattus* is invariably found in houses, and *M. decumanus*, contrary to the almost universally accepted view, is very frequently found in houses, a careful estimate based on records kept at the rat-depot, giving the proportion as 70%.

In the case of *N. bengalensis*, an analysis of 500 rats taken without selection, gives the following results —

	%
Caught in houses and small shops	18.2
Do dal godowns	32.6
Do oil mills	22.4
Do flour mills	17
Do courtyard, etc	5.8

That is to say, dal-godowns being invariably either dwelling-places or intimately associated

with them, about 50% of *N. bengalensis* are in intimate association with man.

The next question that arises is, are they all equally susceptible to plague? When artificially inoculated with a virulent culture of *B. pestis*, there appears to be practically no difference if allowance is made for body weight. During the course of several natural epizootics, however, I have noticed that it is only rarely that specimens of *M. rattus* are to be found amongst the rats removed from the streets. This may not mean that they are less susceptible to plague, but simply that they do not die out in the open.

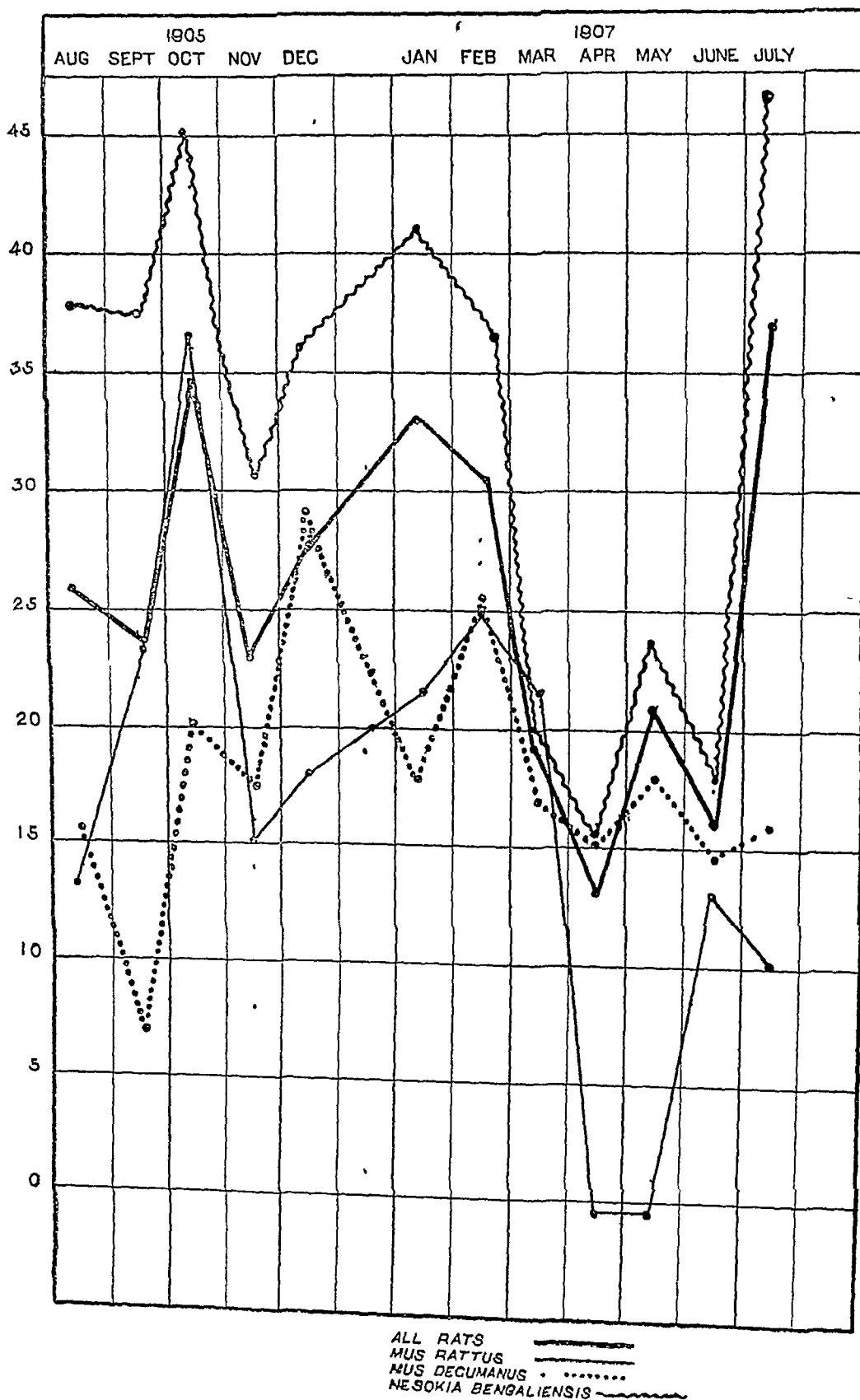
The bearing of these facts on the epidemiology of plague in Calcutta may now be briefly considered. As is well known, one of the most striking features of plague in this city is the remarkable regularity with which it recurs at almost precisely the same time, year after year. So marked is this, that the phrase "Plague season" is now recognized as one of the common phases of life in Calcutta. Simond⁷ suggested many years ago that the periodical recurrences correspond more or less exactly to the presence of an excessive number of young susceptible rats amongst the rat population of an infected area. That is to say, the interval between successive epidemics is bridged over by more or less sporadic cases of chronic rat plague, which in the presence of a sufficiently large number of young rats rapidly become epizootic, an epidemic amongst human beings following after a short interval. That this is not all idle speculation is shewn by the remarkable conclusion arrived at by the Plague Commission,⁸ that 59% of the rats in Bombay were found to be immune to cutaneous inoculation with plague. Obviously therefore, if such a large proportion of the rats surviving one outbreak of plague is immune, a second outbreak must depend very largely on the rising generation of rats. Further, as Liston⁹ points out, young rats like most young animals, are associated with the prevalence of fleas in large numbers, so that another essential factor in the production of an epizootic depends largely on the breeding season. It is now necessary to give a brief outline of the usual course taken by epidemic and epizootic plague in Calcutta. It is convenient to divide the year into three periods —

1. The pre-epidemic, which includes November and December.

During this period, the general mortality shews a slight but definite rise, the number of dead rats found in the streets increases, and atypical sporadic plague cases, which are a feature of the inter-epidemic period, begin to be more numerous. In the north end of the town, of which I have an intimate personal knowledge, the close of the pre-epidemic period (i.e., end of December) has been marked for several years in succession by a curious local outbreak

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By H M CRAKE, M B (VICT),
District Medical Officer, Calcutta



of epidemic plague associated with rat mortality which shows no signs of spread, preceding the true epidemic by several weeks

2 The epidemic period, which must be taken as January to June, in order to include the onset and decline, although the really acute phase of the epidemic rarely lasts as long as this. The epidemic when fairly started, rapidly increases in intensity, and after reaching its maximum in March or April declines with equal rapidity. Similarly the epizootic, commencing in the pre-epidemic period, reaches its maximum from one to two weeks before the epidemic and then rapidly declines.

3 The inter-epidemic period, July to October, is characterized by an abnormally low general mortality, a few sporadic plague cases, and an apparent absence of epizootic plague.

Before endeavouring to form any conclusion from these very imperfectly recorded observations, reference must be made to possible sources of error. The most obvious, of course, is the fact that epizootic plague occurred during the period the rats were being examined. I must confess I am quite in the dark as to what effect this had. Amongst a community of human beings a severe epidemic causes a marked decline in the birth-rate, but in the case of rats, who are not worried with economic and political problems, it would appear quite possible that the survivors are not only the fittest but also find an abundant food supply with very little competition to fear.

Another which is still more painfully obvious is the small number of observations made amongst *M. rattus* and *M. decumanus*.

CONCLUSIONS

I *N. bengalensis*, the common rat found in the native quarter of the city, and *B. decumanus*, the common rat of the mercantile quarter, breed freely all the year round. As they appear to be the rats most largely concerned in the spread of plague in Calcutta, the "breeding season" theory of the seasonal recurrence of plague cannot account for the periodic outbreaks which are such a marked feature of the disease.

II On the other hand, the fact that *M. rattus* is exceptionally prolific in October, just at the commencement of what I have termed the "Pre-epidemic period," may possibly be a factor in determining a recrudescence of plague, because of its intimate association with man. In Calcutta, this is unlikely as these rats do not form more than 10 or 15 per cent of the rat population.

In other parts of India, where the rat population is composed largely of *M. rattus*, then breeding season might prove to be the prime cause of plague assuming epidemic form. In Bombay for example Liston,¹ speaking of the varieties of rats met with, says—"In Bombay at least one-third of the rats are typical *M. rattus*, *re*,

black ... certainly not 1 per cent of Bombay rats belong to this species (*M. decumanus*)". Later observations have established the fact that 75 per cent. of Bombay rats are *M. decumanus*. This not only clearly shows that the breeding of *M. rattus* can have no influence in determining a recrudescence of plague, but also finally disposes of the "*M. rattus* theory," invoked to explain the virulence of the Bombay outbreaks, a striking testimony to the value of Hossack's work.

III. Recent researches have established the fact that rat-plague becomes epizootic and epidemic mainly through the agency of the rat-flea.

That is to say, we have to consider a long and complicated chain of factors, comprising members of the vegetable, insect and animal worlds, *re*, the *B. pestis*, the rat-flea, the rat, and finally man. Having decided that variations in the rat population are not sufficient explanation of seasonal recurrence of plague in Calcutta and being in utter ignorance of *B. pestis* outside the body, save under artificial conditions, the only other known factor which is capable of producing the phenomenon appears to be the rat-flea. In Calcutta the rat-flea practically means *Pulex cheopis*, over 99 per cent of the specimens I have examined being of this species. The only other flea found is *P. serraticeps*. That is to say, the rat-flea must be more prevalent at certain seasons of the year, which coincide with the periods when plague becomes epidemic. That this is so I am perfectly convinced from my own observations. For two years in succession I have noticed on many occasions that a visit to the rat-depôt during the "Plague season" (January to June) would yield 20 to 30 fleas in a few minutes, whereas a few months later, the difficulty in securing even a few fleas was so great that some important experiments had to be abandoned. Hankin,² observing that dog fleas almost disappeared during the hot weather in Agra, suggested that if rat-fleas behave in a similar manner, this may explain the seasonal decline of plague. Liston, as already noted, states that rat-fleas are more prevalent at certain seasons, but is inclined to connect this with the breeding season of rats.

I very much regret my inability to prove this statement by means of figures but the following observation appears to support this view. Eleven infected houses, in the height of the epidemic, yielded rat-fleas in 7 cases, while 8 houses examined in the quiescent period yielded absolutely no fleas.

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- ² Plague Rats and Fleas. Capt W. G. Liston, I.M.S.
- ³ Festschrift von Robert Koch, Fischer, Jena, 1903 (quoted in "Plague, Rats and Fleas").
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FURTHER EXPERIMENTS AS TO THE POTENCY OF VARIOUS DISINFECTANTS AGAINST PULEX CHEOPIS

By W C HOSSACK M D

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In the experiments which I previously described,* there was a fallacy inasmuch as fleas were used immediately after their recovery from chloroform, and their subsequent failure to recover after a disinfectant had been applied might reasonably be ascribed in part to the chloroform. Accordingly in the present series no flea was used until 24 hours had elapsed since it had been collected under chloroform. All the fleas used were *Pulex cheopis*.

Another reason for repeating my original experiments is, because it has become evident that there is a very large margin of unavoidable error in this method of investigation, and only by a long series of observations by different men can conclusions in any way reliable be obtained. One factor of error for which no correction is possible, is the great variation in resistance found in individual fleas, quite apart from the fact that large females are generally more resistant than small males.

In consequence of this, although the results of most experiments are regularly progressive, it happens every now and again that one or more experiments absolutely fail to fall into series with others conducted by the same observer under precisely the same condition.

Thus in my original Cyllin experiments there were no recoveries after $1\frac{1}{2}$ minutes immersion in a solution 1 in 800, whereas five out of six recovered after 1 minute of a solution of 1 in 500, and two recovered out of three after 1 minute of 1 in 600 in the second series.

In Captain Sargol's experiments† with sulphur fumes ($S O_2$) after one hour's exposure in the first experiments, 14 recovered out of 15, whereas in the next three none recovered out of 15. Phenyle in a strength of 1—400 killed five out of five in one minute, whereas Phenyle of a strength of 1—200, though strengthened by being mixed with Cyllin 1—200, gave five recoveries out of 14, the period of immersion varying from 40 seconds to 1 minute. Further mixture of Phenyle with Astackie and tar gave still more discrepant results as if the Phenyle in mixture had lost the power it originally possessed.

Difficulties of comparing results—It is very difficult to make any satisfactory comparison of the result obtained by different observers. The reason for this is that Cyllin, Izal, Phenyle and such like emulsified or acid disinfectants are mixtures of very complex, variable and in some cases unstable composition. The result is that two observers working with a disinfectant of the same name may in reality be dealing with practically two disinfectants. One may be rich in the flea-killing constituent while the other may be quite devoid of it. I shall say a few words later on as to the composition and varying qualities of these disinfectants, there are some indications that the special flea killing constituent may possibly be volatile or at least not stable.

Technique—A few words on technique may perhaps be of use to those who wish to take up the subject. The method I have employed was suggested to me by Major Lamb, I M S, of the Plague Commission, it is a simple and easy way in which to collect living rat fleas in bulk. In the first place, the traps should, if possible, be enclosed in canvas bags at daybreak or as early as practicable. Trap and bag are then put into a tin box and chloroformed bodily. The chloroforming must be very light, so that the rats are all still conscious when the cage is taken out. The bag is thoroughly examined and will be found to contain 50 to 75 per cent of the total fleas present, some unconscious, some beginning to crawl about. While the fleas are being picked off the bag with a piece of cotton wool or a forceps, the trap is replaced in the tin box and the chloroforming is completed. The fleas picked after this second chloroforming will be found to be dead and the rats themselves will be found almost entirely free from fleas. The fleas are most conveniently kept in an enamelled mug $3\frac{1}{2}$ inches high, they are quite unable to jump out of this or to climb the smooth sides. When fleas are required for an experiment, put into the mug a test tube, which must be without any sort of lip, tilt the mug so that the fleas fall down the sloping bottom into the mouth of test tube. It is advisable not to have too many fleas in the tube at once, or it becomes very difficult to make out when motion ceases. Personally I find three a very convenient number. With regard to washing the fleas in the filter, I do not often use it now unless I am dealing a strong solution of disinfectant. It is possible to throw the fleas out of the test tube so that they are immediately left high and dry on the side of the filter. It is only when the fleas have sunk to the bottom of the filter or when I am working with a concentrated solution that I dash in some water to as to limit the action of the disinfectant. Working with very weak solutions, it will be found almost impossible to keep the fleas submerged, but this makes no difference to the ultimate death of the fleas if the disinfectant be a really active one like the particular sample of bazaar Phenyle which I shall speak of later. Even when they immediately start to climb out of the filter it will be found that they die within five or ten minutes. On the other hand, when one is working with strong solutions of inactive disinfectants such as Izal 1 in 150, it will be found that though the flea is rapidly paralyzed, and for a moment or two may appear dead, recovery is rapid and complete, the flea jumping as vigorously as before it was treated. A point of some difficulty is where to draw the line as regards recoveries. A flea may hop and jump, but if it dies within ten minutes of removal from the filter, it cannot be reckoned a recovery. On the other hand, if it dies only after half an hour and has in the interval recovered completely, it should be reckoned a recovery. The reason for this is that the chance of its dying an hour or two after you have first seen it is considerable as the time they live, if kept in a test tube or an enamelled mug, is very short indeed. Out of 252 fleas, mostly alive at mid day immediately after collection, only 97 were found alive 24 hours later. Again of 98 fleas mostly alive immediately after collection there were only 4 survivors in 48 hours, only 1 out of 38 in the first lot and 3 out of 30 in the second lot.

Comparison of present and previous results—In the case of Phenyle No 1 and Phenyle No 2 I used the same samples of disinfectant for both sets of experiments. Phenyle No 1 comes out equally well in both being active up to a strength of 1 in 800. Phenyle No 2 shows a very great discrepancy. Instead of being active up to 1 in 800, it shows 7 recoveries out of 8 even in a strength of 1 in 400 and even in a strength of 1 in 300 it allowed the fleas to partially recover though they were killed within ten minutes. Izal also shows a great discrepancy. Instead of being active in a strength of 1 in 500, it sometimes failed to kill even in a strength of 1 in 100. Different samples were used in the case of this disinfectant. It may be noted that with

* *Indian Medical Gazette*, Vol XLII, No 7, July 1906 and
 * *Indian Medical Gazette*, Vol XLII, No 1, January 1907
 † *Indian Medical Gazette*, Vol XLII, July 1907, page 256

5 minutes immersion a strength of 1 in 300 has been practically satisfactory in destroying the fleas of captured rats at the Rat Depôts. Cyllin originally gave rather discrepant results which tended to show that 1 in 200 was about the limit of its active strength. The present experiments show that Cyllin may be useless even in a strength of 1 in 100, the same sample was used in both sets of experiments. Whether these discrepancies are to be explained by the influence of chloroform in the first set of experiments I cannot say. It is possible that the active flea killing principle is volatile or at least unstable.

Saigol's results compared with mine—Captain Saigol showed that Phenyle in a strength of 1 in 800 killed two out of six fleas, confirming my statement that Phenyle was the best of the three, Cyllin, Izal and Phenyle. I fully confirm his finding as to the very great potency of Phenyle and Petrol 1 in 1. Two out of three fleas succumbed to 1 in 1600, and even 1 in 2000 had some effect, the fleas dying soon after recovery. On the other hand my results with Cyllin and Petrol 1 in 1 are at absolute variance with his. Instead of finding it faintly active at a strength of 1 in 1600, I make it comparatively useless even as strong as 1 in 250. I think that varying samples of disinfectant can be the only explanation of such a discrepancy as this or that found in comparing the tests of Cyllin and Phenyle in mixture. As regards my statements as to the marked inefficiency of Crude Oil Emulsion he absolutely confirms them, shewing it to be unreliable even in a strength of 1 in 10. Cyllin and Phenyle 1 in 1 of a strength 1 in 100 gave with him very poor results, 5 recoveries out of 14. On the other hand, I had 0 recoveries out of 12 in a dilution running up to 1 in 300 and it was only when 1 in 800 was reached that all effect was lost. It should be noted that the Phenyle I used in these last experiments was a cheap bazaar Phenyle retailed at Rs 16 per gallon. I found it so phenomenally active, shewing slight effects even in so high a dilution of 1 in 1500 that I have sent the original sample home to the manufacturers for analysis. As shewing how greatly samples of Phenyle may differ, the following results of examination may be quoted. The viscosity was roughly tested by noting the time taken in emptying a small pipette of 1 c.c. capacity at the temperature of the laboratory, 88° F.

The colour was noted in the pipette and the free Alkalinity was determined in terms of normal Na OH.

Different samples of Phenyle compared

	Bazaar Phenyle	Phenyle No 1	Phenyle No 2
Specific gravity	1.039	1.036	1.066
Time of flow	32"	23"	61"
Alkalinity per c.c.	.008	.0014	.0012
	transparent yellowish brown	Opaque dark brown	Opaque dark brown

Note—Bazaar Phenyle was sold to me under the name of "New Disinfectant". I am informed that its trade name is "Santitas Disinfectant Fluid" supplied by the Santitas Company.

Phenyle No 1 is Little's Soluble Phenyle
" " 2 is Calvert's Cresol

With respect to the instability of some of the Tar Oil disinfectants, in addition to the merely inferential evidence which is deduced from the great variation in the results of tests, I have direct evidence in the case of Izal. This under Calcutta conditions at least has a tendency to deposit a pitch like substance with a grey rosy insoluble residue.

Crepheol I have shewn to be reliable up to 1 in 300. Guaiacol and Cressylic Acid seem to be completely lacking in effect in a strength of 1 in 200. It should be mentioned that the Cressylic Acid was a crude sample very little soluble in water. It was the filtrate

that was used first. Later I got almost complete solution by the addition of Spt Vin Rect 5 in 10 and saturated solution of Na OH 1 in 10, but the filtrate or rather solution was still ineffective. From this and my previous experiments with Carbolic Acid it appears that the active element in the crude mixture of cresols and higher homologues which compose the disinfectant, is neither Carbolic nor Cressylic Acid. As a matter of fact, the Carbolic Acid is now a days nearly always extracted, though in some of the blast furnace oils there is little if any even to begin with.*

The fact that Cressylic Acid is apparently not the active constituent rather discounts the criticism of my work made by Dr. Somerville,† based on the fact that Phenyle and Jeyes's Fluid with the same Cressylic Acid index gave different results as to killing fleas. The flea he worked with was probably not *Pulex cheopis* and the general conditions of his experiment were probably entirely different from mine. How sensitive the flea is to seasonal and atmospheric differences have been pointed out in the last report of the Plague Commission. I have to some extent tried to allow for this myself, if I found I was getting exceptionally good results with one disinfectant, say bazaar Phenyle, I would do a check experiment in the middle of the series with a disinfectant which I knew to be comparatively powerless, such as No 2 Phenyle. The fact of their recovering from the second shewed that their failure to recover from the first was not due to any peculiarity of this particular batch of fleas or of the experiment.

General Summary—The Tar Acid disinfectants are very variable in composition, so that in the present state of our chemical knowledge it is difficult to compare the result of different observers. Phenyle and Petrol in equal parts seems to be the mixture that possesses the greatest pulicidal power. Possibly the Phenyle is the important and active part of the mixture.

The ideal for Plague purposes would be a Cyllin with the pulicidal power of the most potent samples of Phenyle or a Phenyle with the germicidal power of a Cyllin. Possibly in the near future the manufacturers may be able to supply the article desired.

Practical Experiments—Thanks to the courtesy of General Des Voeux with whom I was put in communication by Mr H. Maxwell Lefroy, Imperial Entomologist, as to the best means of treating barracks at Fort Lockhart and other places on the Samana Range which were acutely infested with fleas, I am able to quote from letters as to the results obtained. Capt. Bisset, 1 M.S., writes of Crude Oil Emulsion as follows—

"In the former (Barracks) there was a marked reduction in the number of fleas for about ten days. In the latter (Tents) the results were very unsatisfactory. The night after I sprayed two tents which was done very thoroughly indeed, the men said the fleas were worse than they had ever been before, and there is no doubt they were badly bitten. Two or three days later they said they thought that there were fewer fleas but that they were still very bad."

"The whole of the Samana swarms with fleas. When one is sitting near the tennis court some quarter of a mile away from the Fort, one frequently finds three or four crawling on one's flannels. Any application is bound then to have only a temporary effect."

Lieut. Rheinhold writes of Phenyle "for killing fleas in houses, it is very satisfactory with mud floors, but in bungalows with boarded floors raised off the ground, the effect is simply to drive them out of range only to reappear later, at least that was our experience at Bakloh when I used Phenyle in, if anything, stronger solution than Dr. Hossack recommends. I don't doubt but that will be your experience on the Samana unless you use very large quantities of fluid."

* Thorpe's Dictionary of Chemistry, Vol 1, p. 619.
† Indian Medical Gazette, Vol XLII, part 8, page 316, August, 1907.

Serial No of experiment	Date	Disinfectant	Dilution	Duration of Motion	Duration of Immersion	No of Fleas	No of recoveries	REMARKS
1	24th July	Phenyle No 1	1-800	20"-40"	1'			
2	25th "	Do	1-800	30"-45"	1'			
3	26th "	Do	1-800	30"-45"	1'	3	0	
4	26th "	Do	1-800	30"-45"	1'	3	0	
5	25th "	Phenyle No 2	1-800	30"-45"	1'	3	0	
6	25th "	Do	1-800	40"-50"	1'	3	0	
7	26th "	Do	1-800	45"	1'	3	0	
8	26th "	Do	1-800	40"	1'	3	2	Third moved slightly but dead in 2 minutes
9	26th "	Do	1-800	40"	1'	3	2	
10	31st "	Do	1-500	45"-60"	1'	2	1	The second partly recovered but could not jump
11	31st "	Do	1-500	60"	1'	4	4	Complete recoveries
12	31st "	Do	1-400	40"	1'	3	3	Disabled
13	31st "	Do	1-400	40"-60"	1'	3	3	
14	26th "	Do	1-400	60"	1'	2	1	One jumped out of filter All quite lively
15	26th "	Bazaar Phenyle	1-300	40"	1'	3	0	Both moved in filter but one died immediately
16	26th "	Do	1-200	30"-45"	1'	3	0	All dead in ten minutes
17	26th "	Do	1-100	25"-45"	1'	3	0	
18	26th "	Do	1-200	25"-35"	1'	3	0	
19	30th "	Do	1-300	35"	1'	3	0	
20	30th "	Do	1-400	35"	1'	3	0	
21	30th "	Do	1-400	35"	1'	3	0	
22	30th "	Do	1-500	35"-50"	1'	3	0	
23	30th "	Do	1-500	50"-60"	1'	3	0	
24	30th "	Do	1-700	50"	1'	3	0	One moved legs momentarily
25	31st "	Do	1-800	50"-60"	1'	3	1	Do
26	1st "	Do	1-800	50"	1'	3	0	It climbed up the filter
27	1st "	Do	1-800	50"	1'	3	0	It only moved feebly
28	1st "	Do	1-1000	60"	1	3	1	One recovery momentary
29	1st "	Do	1-1000	60"	1'	3	1	Second dead in 5 minutes
30	1st "	Do	1-1000	60"	1'	3	1	All moved in filter, two dead in 5 minutes Survivor feeble
31	1st "	Do	1-1500	45"-60"	1'	3	1	All moved in filter, two dead in 5 minutes
32	1st "	Bazaar Phenyle and Petrol 1 in 1	1-800	60"	1	3	0	All dead in 2 minutes
33	1st "	Do	1-1200	50"-60"	1'	3	0	All moving in filter, one died immediately The other two feeble, unable to jump
34	1st "	Do	1-1200	45"-60"	1'	3	0	All moved in filter but died immediately
35	1st "	Do	1-1600	50"-60"	1'	3	0	Momentary movement in two
36	1st "	Do	1-2000	50"-60"	1'	3	1	Second jumped twice but dead in 5 minutes
37	1st "	Bazaar Phenyle and Cyllin 1 in 1	1-100	20"-30"	1'	3	2	Movements feeble
38	1st "	Do	1-100	30"-40"	1'	3	2	One very feeble, soon died
39	1st "	Do	1-200	40"-50"	1'	3	0	Other two recovered fully but died in 15 minutes
40	1st "	Do	1-200	40"-60"	1'	3	0	One moved faintly
41	1st "	Do	1-300	50"-60"	1'	3	0	One climbed filter but died immediately
42	1st "	Do	1-400	60"	1'	3	0	One moved in filter
43	1st "	Do	1-500	60"	1'	3	1	Do dead in 5 minutes
44	1st "	Do	1-600	60"	1'	3	1	Two could not jump and dead in 5 minutes
45	1st "	Do	1-800	60"	1'	3	2	Recoveries feeble, third dead in 5 minutes
46	1st "	Do	1-1000	30"-60"	1'	3	2	Dead in 5 minutes
47	1st "	Do	1-500	60"	1'	3	2	Recoveries complete
48	1st "	Do	1-250	20"-60"	1'	3	2	Do
49	1st "	Do	1-200	15"-30"	1'	3	2	Do
50	1st "	Do	1-100	20"	1'	3	2	Do
51	1st "	Do	1-100	20"	1'	3	2	Do
52	1st "	Do	1-500	50"-60"	1'	3	0	Do
53	1st "	Do	1-500	60"	1'	3	1	Partially recovered but dead in 10 to 15 minutes
54	1st "	Do	1-400	35"-60"	1'	3	3	Two died in filter, both small fleas
55	1st "	Do	1-400	45"-60"	1'	3	1	All large fleas, recovery complete
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EXPERIMENTS WITH PULEX CHEOPIS—(Concl'd)

Serial No of experiment	Date	Disinfectant	Dilution	Duration of Motion	Duration of Immersion	No of Fleas	No of Recoveries	REMARKS
55	10th "	Filtrate of Tar Oil	1-200	60"	1'	3	3	Recoveries immediate and complete
56	10th "	Filtrate of Cressylic Acid	1-200	60"	1'	3	3	Do do
60	10th "	Ginacol	1-200	60"	1'	3	3	Do do
61	12th "	*Cressylic Acid dissolved	1-200	60"	1'	3	3	Do do
62	12th "	Do do	1-200	60"	1'	3	3	Do do
63	13th "	Izal of specific gravity, 1046	1-300	30"	1'	3	2	Do do
64	13th "	Do do	1-300	30"	1'	3	2	Do do
65	13th "	Do do	1-200	30"	1'	3	2	One of recoveries immediate and complete
66	13th "	Do do	1-150	30"-40"	1'	3	3	Complete but not immediate
67	13th "	Do do	1-100	20"-30"	1'	3	3	Do do
68	13th "	Izal of specific gravity, 1041	1-200	20"	1'	3	1	Recovery immediate, others showed faint motion
69	13th "	Do do	1-200	20"-45"	1'	3	3	One immediate, two delayed, all complete
70	13th "	Do do	1-150	15"	1'	3	3	None immediate but all complete

* Note—The Cressylic Acid formed a good deal of flocculent only precipitate and solution was very incomplete. Almost complete solution was obtained by adding to 1 c cm of Cressylic Acid 5 c cm of Sept Vin Rect and 1 c cm of a saturated solution of Na O H, but it was still necessary to filter. The tar oil was very slightly soluble.

FEVER ASSOCIATED WITH SPIROCHÆTES
IN THE BLOOD

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A PRISONER, *Nar* by caste, aged 20, who had been in the jail for three weeks, in perfect health, complained on August 12th of a feeling of coldness and of aching pains in his limbs, he was admitted into hospital and there went through all the typical symptoms of an acute ague, the cold stage lasted four hours, the hot seven hours, succeeded by a sweating stage of two hours, he was then apparently quite well, the next day, however, the performance was repeated, the attack commencing somewhat later in the day, and, on the third day, he suffered from another attack, much milder than the two previous however. Since then he has been in good health, and has suffered no relapse up to the present, *ie*, 15 days after the first bout of fever.

No quinine was given throughout, the only treatment being a purge on the first day, and then a diaphoretic mixture. This man stated that he had never been out of the district and had not been ill during three years prior to his admission into the Jail.

A fresh preparation of his blood examined with a $\frac{1}{4}$ th oil immersion lens, on the first day of his fever, during the hot stage and when his temperature was 102.5, showed an absence of malarial parasites, while closely searching the clear spaces between the corpuscles, organisms having the appearance of minute slender threads, possibly flat and ribbon-shaped on section, slightly wavy with three or four undulations, were seen slowly moving across the field, which they took 20 minutes to cross. They numbered

about one to every six fields, and measured on an average 25μ although some were only half this length, they were of uniform thickness, blunt at either end, and of very slightly refringent nature, they presented no evidence of nucleus, undulating membrane, or flagellum. Some of the organisms, however, possessed minute fibrils, (the *Abgeloste Myophane*, of Prowazek) projecting laterally from both sides throughout their length.

These fibrils had not the appearance of flagella, but were rather more like small thick projections, on the external surface of a sheath.

The body of the parasite appeared to contain a few transparent granules of different sizes.

A film stained by Romanowsky's method, shewed the parasites to possess what looked like a sheath, one of its blunt ends was either prolonged as a membrane, consisting of torn looking fibrils, stained lighter than the main body, or the end was stippled clean with the piece of sheath projecting out at an angle from the side, some of the smaller parasites appeared curled up inside a red corpuscle, with a small piece of sheath protruding. Some of the stained forms showed transverse faintly staining sections, with sharp-pointed ends.

On the 13th August another prisoner confined in the same barrack had vomiting and diarrhoea with a typical attack of ague, lasting well into the subsequent day, this man, a sepoy, declared that he had no fever for many years prior to his present bout. Fresh preparations and stained films of his blood taken during the hot stage, showed exactly the same condition as regards parasites, *ie*, spirochætes of a similar nature to those present in the first case were found, while there was an entire absence of malarial parasites. The spirochætes were of the same size, had the same slow undulating move-

ments and on staining appeared to possess some sort of sheath

A blood count in this case gave—

Polynuclears	71
Large mononuclears	15
Small mononuclears	14

In neither case was there any tenderness or enlargement of the spleen or liver, nor were parasites found subsequent to the disappearance of the fever

Other prisoners occupying the same barrack remained healthy and all agreed that they were not troubled by ticks or bugs although mosquitoes were present in plenty

The symptoms in these two cases were not unlike those found in natives suffering from Tick fever, the spirochæte is also somewhat similar to *Spirochæta duttoni*

It is justifiable to draw the conclusion that the fever in both these cases was due to the presence in the blood of spirochætes, their absence from the blood at apyrexial periods, and failure to find them in the other inmates of the barrack, and the rapid spontaneous cure together with the absence of malarial parasites confirms the supposition

As to the mode of infection, it is of course impossible to exclude ticks or bugs, but as all the prisoners were unanimous in stating that mosquitoes were the only source of annoyance in the barrack, it is probable that these last were the infecting agents

The main characteristics of the spirochætes in these cases were, in the fresh preparations, the length varying from 12μ to 25μ , the blunt ends, the numerous small lateral projections on some of the forms and the very slow wriggling movements, and in the stained films, the appearance of torn and partially stripped sheath, the sharp-pointed forms with transverse faintly staining sections, and the presence of a few forms with single or double swellings

[A report from the Pasteur Institute Laboratory, Kasauli, states that these slides on examination showed typical *Spiroch Obermeyer* and also several involution forms—Ed, I M G.]

THE URINE AND BLOOD OF EUROPEANS AND BENGALIS*

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We are all aware in a general sort of way that the natives of this country and particularly

of this province differ from the natives of European and colder countries to a considerable extent, both from a physiological and from a pathological point of view, that is, that the conditions met with in the normal healthy Bengali are not exactly the same as obtain in the European, and also the reactions observed pathologically vary in detail to what would be expected from a study of the European

It was in order to obtain some definite information with regard to this vague feeling that the staff of the Physiological Department turned their attention just a year ago to the study of the urine and blood. So far as our knowledge goes, no one hitherto has made an investigation on the same lines, and we consider the results we have obtained are not altogether devoid of practical clinical importance

Very early in this work we found that the usual standards of the urinary constituents as stated in text-books on the urine of Europeans could not be accepted for natives of Bengal and that, therefore, any practical conclusions based on a comparison with those standards must be misleading and fallacious. Further, as no consideration of the urine in itself could be looked on as a statement of the whole case without at the same time a review of the condition of the blood—the source from which it is derived—it will be necessary to make some attempt to examine any modifications that occur in the blood of the Bengali

In the first place, therefore, we shall proceed to state the results of our investigations on the urine and, at the same time, compare the standards so obtained with those laid down for Europeans

NORMAL STANDARDS OF THE CONSTITUENTS OF THE URINE OF BENGALIS

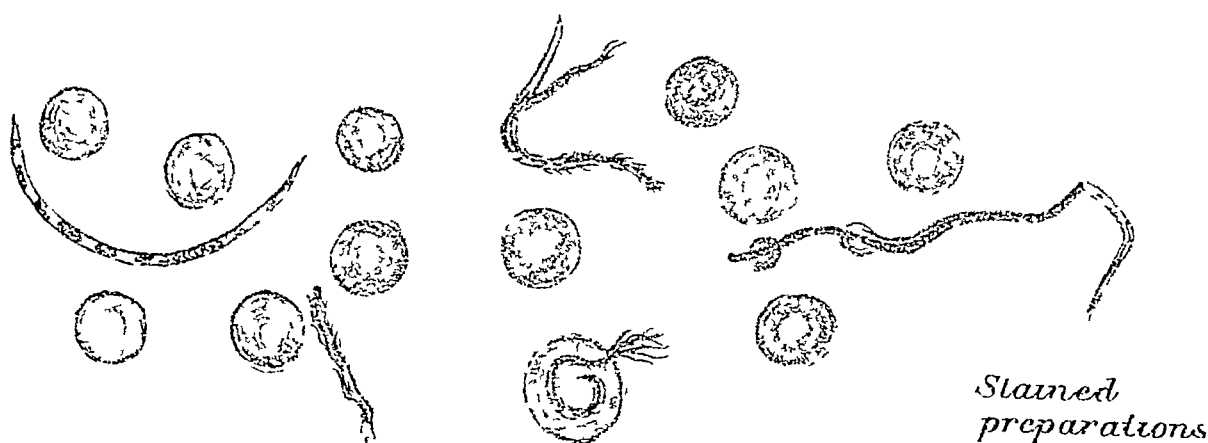
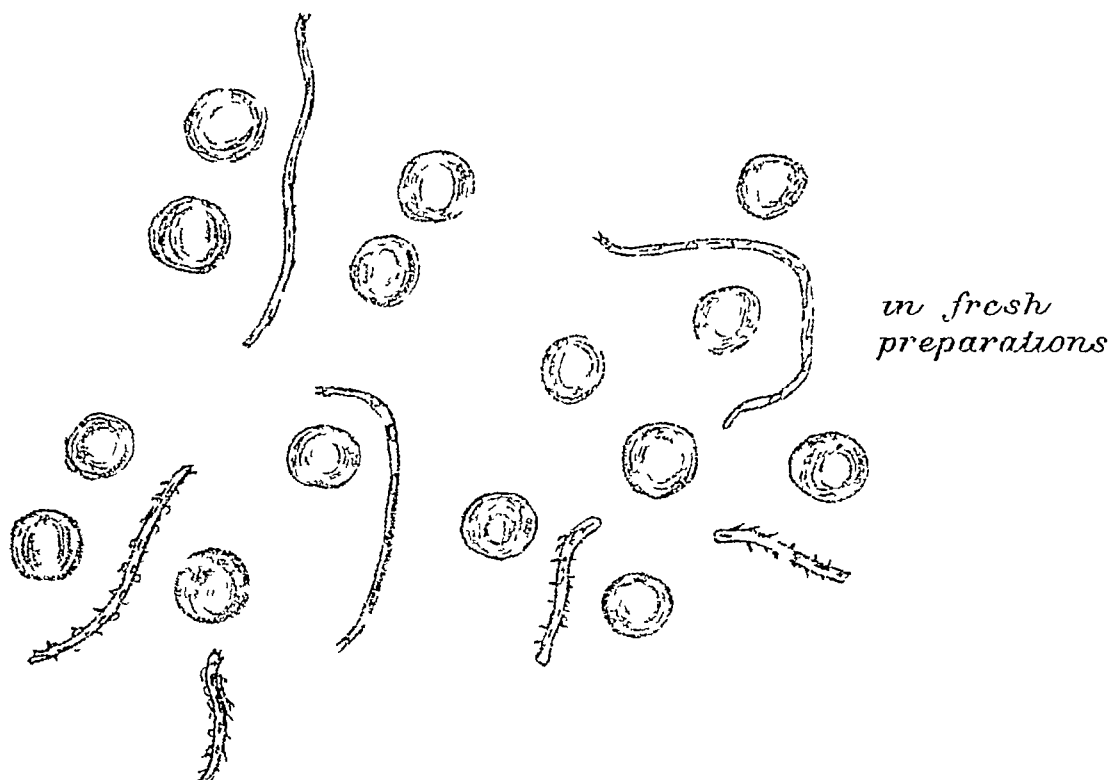
In carrying out this work the procedure was to have the urine collected for four or five days consecutively from the subjects of the experiment—these were the students attending the different classes and the servants of the College—daiwans, bearis, mehtars and domes. In this way we obtained a fairly wide source from which to secure the data we sought. These different classes represent several castes, and as was expected the diet differed to some extent in each caste. Also, by having the urine collected for several days consecutively and analysed each day, we were able to obtain more accurate results of the average quantity of the different constituents than by examination of 24 hours urine only

The individuals examined were in all cases Hindu males of mature age and, as far as could be judged, in a normal state of health. The total number of complete observations on the urine which we analyse in this paper is about 230. One hundred and fifty were on students, the remainder on servants of the College.

* Being a paper read at the August Meeting of the Medical Section of the Asiatic Society of Bengal

FEVER ASSOCIATED WITH SPIROCHAETES IN THE BLOOD

By CAPT W H KENRICK, I M S,
Diplomate Tropical Medicine, Civil Surgeon, Saugor, C P



We shall now take up each point investigated in detail —

(1) *The quantity of urine passed in the 24 hours*—As our investigations extended over a period covering both the hot and cold weather, the modifications in quantity due to loss from the skin and lungs may be neglected

The average quantity voided per day over the whole series works out to be 1,177 ccs. This approximates very closely that recorded for American students in winter, viz, 1,166 ccs. On the other hand it is below the average generally accepted for adult male Europeans, viz, 1,200—1,500 ccs.

(2) *The specific gravity*—The average specific gravity of normal urine in Europeans is 1,020, with variations in health of from 1,015—1,025. Except under exceptional circumstances such as after the inhibition of large quantities of fluids, or the reverse, it rarely falls or rises beyond these limits.

When we examine the specific gravity of the urine of Bengalis, a marked difference is at once evident. The limits of variation are very much wider, ranging from averages of 1,006—1,024 for different individuals, and, over the total observations made, the average is 1,013. This is well below European standard.

It follows from this, that, although a much larger proportion of the fluids got rid of from the body pass out by the skin in tropical climates than in Europe, yet the quantity of total solids as evidenced by the specific gravity is lower in the urine of the Bengali than in the European. This is exactly the opposite to what would be expected.

(3) *Quantity of urea excreted*—By far the largest proportion from 84—87 per cent of the nitrogen of katabolism is excreted by the kidneys in the form of urea. It is the most important of the nitrogenous excretions of the body, being the chief end product of the physiological oxidations of the proteids of the tissues and of the katabolism of proteids taken in the food, that have never been built up into living protoplasm.

The amount of urea from all the different sources excreted by Europeans is generally accepted to be from 30—35 gms per day or equivalent to about a 2 per cent solution in the urine. As is well known, the quantity excreted varies directly with the amount of proteid in the diet.

The variations met with in our observations on Bengalis were from as low as 5.56 gms up to 19.68 gms. The average excretion over the whole series was just under 13 gms of urea per day.

This is a very marked departure from the average 30—35 gms excreted by a normal healthy European, and from a clinical point of view is a matter of some importance in conditions requiring a quantitative analysis of the urine. Its scientific value will be more apparent under the next heading.

(4) *The total nitrogen of the urine*—Kjeldhal's method of estimation was adopted in every instance.

By a determination of the total nitrogen present in the urine, we have a measure of the total nitrogenous metabolism of the body without regard to the specific form in which the broken down proteid waste products are eliminated, this determination is therefore a matter of paramount importance in all problems of proteid metabolism.

Further, as nitrogen forms about 16 per cent by weight of the proteid molecule, 1 gram of N is equivalent to 6.25 gms of proteid. Another point of importance in the estimation of the total nitrogen in the urine is that, as the human system is ever striving after a condition of nitrogenous equilibrium, we have practically a measure of the total intake of proteid in the food afforded by the quantity of nitrogen excreted.

In an averaged sized man the total nitrogen eliminated in 24 hours varies, according to the generally accepted urinary standards for Europeans, between 14 and 18 gms.

This would correspond to from 88 to 112 gms of proteid material metabolised in the 24 hours and would mean if nitrogenous equilibrium were being maintained that an equal quantity of assimilable proteid food would be required. Let us compare these standards with the quantities obtained in Bengalis. The average quantity of nitrogen eliminated in the urine of the Bengali works out at 5.98 gms per day. This low average is in marked contrast to the 15—18 gms of Europeans and, from a scientific point of view, forms one of the outstanding features of the whole results.

This quantity of nitrogen excretion—5.98 gms—means the metabolism of only about 37.50 gms of proteid a day by the Bengali, an amount less than one-third of the proteid in standard dietaries. This, it must be remembered, is found in individuals who had a free choice of food, and whose several conditions in life correspond in every way to the great majority of the population of the country.

(5) *The freezing point of the urine*—Cryoscopy.

During the past two years we have made hundreds of observations on the freezing point of the urine, in both physiological and pathological conditions. As far as our results go, they would appear to show that, in normal healthy urine, the freezing point varies directly with the specific gravity. Pathologically cryoscopy of the urine is of somewhat greater importance, and when combined with that of the blood is a method of investigation of great value. The difficulty of obtaining the necessary quantity of blood can be got over by estimating the total concentration of the serum which can be done from a drop of blood. This method gives valuable results in the examination of cases of Bright's

disease, the different forms of anæmia, achyllostomatiasis, etc.*

(6) *The chlorides*—As is well known, herbivorous animals have a strong craving for salt in the food, but this is not true regarding carnivora. The diet of the Bengali being so largely of a vegetable character, we expected to find a high percentage of chlorides in the urine. Such, however, turned out not to be the case. In Europeans the average amount excreted per day is 15 grms, varying of course with the quantity ingested. In the Bengali the average excretion we found over the whole series of analyses to be 9.43 grms. When we come to a study of the changes met with in the blood of Bengalis, it will be shown that the serum of the blood contains a higher percentage of salt than is found in healthy Europeans and, as just stated, the salts in the urine are lower, we have, therefore, a very marked difference in the ratio of the salts of the urine to the salts of the blood in European and Bengali.

Professor Wright has shown that, so long as the kidneys are healthy, this ratio never falls below 2 in Europeans, and we have shown that in Bengalis the ratio rarely exceeds 1.20*.

7 *The phosphates*—The average amount of phosphoric acid in combination with lime, magnesia and alkalis excreted daily by Europeans is stated to be from 2—3.5 grms.

The average in our observations in Bengalis lies between .95—1.4 grms daily. This is less than half the quantity excreted by Europeans.

It will be seen, however, that the relation of phosphoric acid to the nitrogen in the urine is the same for Bengali as European,

$$\text{i.e., } \frac{N}{P_2O_5} = \frac{5 \text{ or } 6}{1}$$

8 *Uric acid*—The average daily output of uric acid in Europeans varies from 3—7 grms. Large quantities of animal food rich in purpurin bodies cause an increase, otherwise the excretion of uric acid is very constant for each individual.

In Bengalis the average amount found in the urine was 48 grms daily, which is fairly well the same as obtained in a European living on a low proteid intake.

9 *The sulphates*—Compared with the 25 to 3 grms of sulphuric acid excreted daily by the average European, we found a somewhat lower average for the Bengali, viz., 1.75—2.2 grms a day.

As far as our observations go, we found the same relationship between the organic sulphates and the total sulphates present as is the case in Europeans.

The organic sulphates are about $\frac{1}{10}$ th of the total sulphates and would therefore in Bengalis work out to 15—22 grms a day.

THE BLOOD

The marked differences found in the chemical composition of the urine of the Bengali compared with that of the European would *a priori* lead us to suspect similar changes in the blood. In order to obtain some idea of what these differences might be, a large amount of work has been carried out, and the results we arrived at are not uninteresting. We shall examine these under different headings.

1 The corpuscular enumeration and the hæmoglobin value.

(a) The red blood corpuscles are more numerous in the Bengali than is the case in the European. In over 80 per cent of the 156 persons we examined the average number of red cells was 53,00,000 compared with 51,93,000, the average of 113 observations on healthy European students*.

(b) The number of white blood corpuscles is practically the same as in Europeans, the average being slightly higher working out at 9,000 over 156 observations.

(c) The hæmoglobin estimation [Haldane's carbon monoxide method was followed in every instance—this method gives very accurate readings within an error of 1 per cent].

The Bengali's blood shows a very decided difference in the percentage of Hb compared with the normal European. Over 75 per cent of the 156 individual estimations showed only an average of 81 per cent Hb, and remembering that the Bengali has a greater number of red cells than the European, we can determine the hæmoglobin value per red blood corpuscle and compare the result with the European.

In Europeans the ratio of percentage of red cells to the percentage of Hb present varies from 95—1.1. In Bengali this ratio is found to be between 74—85, that is, instead of each red blood cell having its full quantity of hæmoglobin, it has only on the average 75 per cent of its proper amount.

2 *The chemical composition of the Blood*—

In order to get sufficient blood for analysis we resorted to the method of "pooling," i.e., we took a measured quantity from each of a number of individuals and thus not only obtained sufficient blood but also got the average composition over a number—usually 10—15 individuals.

From analyses of blood provided in this way from the same classes as worked with hitherto the following results were obtained—

	European (Schmidt)		Bengali (Med College)	
Water	78.87	%	78.88	
Total Solids	21.13	%	21.12	
Proteids	19.17	%	16.20	also 18.212
Salts	78	%	1.06	

* See *Lancet*, June 1st, 1907. M'Cay on the Excretory quotient.

* Stewart—Manual of Physiology.

Thus compared with the composition of the blood in Europeans, it will be seen —

(a) The proteid content is on a lower scale despite the fact already stated that the corpuscular element is increased. It must therefore follow that the decrease lies in the floating proteid of the blood—the serum globulin and serum albumin—the source from which all the nitrogenous tissues draw their supply of nutrition. This has a very important bearing on the metabolism of the Bengali and also on the question of the sufficiency or otherwise of the diet scales laid down for prisons, schools and other institutions.

(b) The salts of the blood in Europeans average 78 per cent. In Bengalis there is no doubt the total salt is increased. In the quantitative analyses of the blood of students and different castes of servants we found 106 per cent salt present. This amount almost exactly corresponds to that obtained by quite a different method of investigation, *viz*, Wright's hæmolysis method. The results obtained by the application of this method to study of the salts in the blood of the Bengali have already been published by one of us in the *Lancet* of June 1907*. It will be sufficient at present to say that in over a large number of observations the average percentage of salt found in the blood of the Bengali was 105.4. Regarding the explanation of this increased salinity of the blood, we can only state that it is an accompanying factor in anæmia, a certain degree of which has been shown to be ever present in the Bengali. For further information on this subject we would refer again to the above-mentioned article in the *Lancet*.*

3 *The Blood pressure*—In healthy European adults the normal arterial pressure in the brachial artery is 110 mm to 130 mm—the reading being taken in the sitting posture. A good average mean pressure lying between 115 and 125 mm Hg. This varies comparatively little in health for the same individual when measured under similar circumstances and on the same artery. We have made observations on the blood pressure of Bengali adult males in over 500 different individuals. The instrument made use of was Riva Rocci's sphygmomanometer with Recklinghausen's broad armlet—the reading being taken at the disappearance of the pulse in radial artery. All observations were

made with the individual in the sitting posture—the arm raised level with the heart.

The average mean pressure on the whole series works out at just under 100 mm. Hg.

The blood pressure of the Bengali is, therefore, on a much lower scale than is the case in Europeans,—a condition which must re-act on the vigour and energy of the individuals of the community. This will be all the more evident when we recall the condition of the blood with regard to the percentage of hæmoglobin.

We have shown that the Hb is reduced to upwards of 25 per cent, which means that the oxygen-carrying capacity of the corpuscles is reduced to the same extent, and further, as just stated, the pressure of the flow of the blood in the arteries is little more than 75 per cent of the blood pressure in Europeans.

These and many other differences met with in the Bengali modify, to no small extent, the physiological conditions of nutrition, growth, power of muscular contraction and metabolism generally but also, pathologically, alter the re-actions occurring in disease. It was in order to gain some insight with regard to these and other departures from generally accepted standards that the investigations—the results of some of which are recorded here—were begun and carried out.

AN OUTBREAK OF TRICHINOSIS IN GARHWAL

By C G THOMPSON,

MILY ASST SURGEON,

Civil Surgeon

*Translation of a report, dated 27th March 1907, from Harak Singh, Patwar, of Talla Parnkhanda**

ON the night of the 8th "Phagan" (19th February 1907), when there was snow in the fields, some wild pigs came down from a forest in Mouza Tongasi and dug up a field of wheat after removing the snow from the ground. On the following morning some people of the upper part of this village went in search of them with a gun, eventually three boars were tracked down. Two small ones and one a very fine large one. The two former ran away, but the latter stopped at the edge of a wooded ravine. Kedar Singh fired and shot it. Some men of Tongasi village were grazing their cattle close by, and they all assembled when they heard that the boar had been shot. The meat was distributed among 18

* Parnkhanda is a large parganna in Upper Garhwal. The people there are wilder and more barbarous than those of the south of the district. Not only are their methods of preparing and cooking food most primitive, but their usual repulsive custom of immediately ripping open a carcass and devouring raw parts of certain internal organs (heart, liver, spleen, etc.), whilst still alive and quivering, naturally enough, lay them open to infection.

* McCay—*Lancet*, June 1st, 1907

[Oct, 1907]

families No share was given to the remaining 15 families of those persons who did not go with the party to shoot the boar. The meat was consumed by about 92 people altogether, big and small. Small quantities of it were also sent to three families of Mauzas Langasi and Dando. On the 23rd February some of the men who partook of the flesh began to complain of pains and aches and afterwards suffered from fever. Gradually up to about the 10th March some 64 men took ill and deaths began to occur daily. Eleven men have already died, 30 are still lying ill, and 23 have recovered. No new cases have occurred since 10th March. The villagers† have made liberal offerings, and it is now hoped that no more cases will occur. Out of the 30 lying ill at present, some seven or eight are in a very serious condition. In Mauza Pakhi two men are ill and one is dead. In Mauza Langasi two have recovered and one is still dangerously ill. In Mauza Dando two men have recovered and three are still down. It now appears the boar was ill with some

† There is a tendency in every Garhwali to put down any unusual occurrence to the work of a deity. Every occasion of the trouble and trial, sickness and death, is borne with surprising equanimity and invariably taken in the light of a just retribution for some one or other sin previously committed and firmly believed by one and all to be undoubtedly caused by the visitation of God.

Last June on my way to Badrinath, I took the opportunity of visiting the villages of Tongasi and Pakhi just four months after the above outbreak took place and examined some of the recovered cases. The majority had apparently quite recovered. Three or four were still suffering from general muscular stiffness and tenderness, but one particular case, a girl of about 13 years of age, was found in a hopelessly debilitated condition. Apart from the marked general emaciation, her upper and lower limbs were simply covered with ulcers, thickly studded over with the encapsulated parasites—tiny little greyish dots with a rough shotty feel and very distinctly visible to the naked eye. In most of the fatal cases death resulted from pneumonia, but one or two were also distinctly traced to peritonitis. That the disease is very prevalent in this district, I have not a shadow of doubt. Only last month I fell in with rather an intelligent old shikari, an ex-soldier from Lansdowne, and the story that he related in this connection, and to which I listened with absorbing interest is worth while reproducing—

"Some 15 years or more ago a 'shooting sahib' came and encamped in our patni near my village. It was during the 'setkala' (cold) season I remember, for the 'wheat' crop was just about to be cut. Well, one morning a 'malgaru' headman came and gave 'khubburi' that a number of pigs had taken shelter in his wheat fields near the camp. We all turned out and got to the rejoicing when the sahib's rifle spoke and a couple of large boars rolled over. All of us had a great feast that day. We ate, the servants ate, and if I remember right the sahib also ate and what we couldn't eat we distributed in the villages. What more can I say, sahib, we were young and foolish in those days and did not know better. The truth is—those pigs were possessed and naturally enough retribution followed fast and swift. Just a few days after, a great sickness broke out in camp and some 20 men died including the sahib's khansama and orderly. All the remaining coolies bolted and the sahib, thoroughly disgusted and leaving everything behind, took the straight road to Kotdwara."

Ever since the Punkhunda outbreak (February 1907), I have been at pains to make particular enquiries wherever I have gone on tour, and I now have a settled conviction that a good proportion of the deaths shown yearly under the headings of fever, diarrhoea, pneumonia, etc., are really due to the ingestion of trichinous pork.

The Deputy Commissioner of the district has been addressed on the subject and prophylactic measures suggested with a view to putting the villagers in possession of the facts, but I fear it will be a very long time before the people come to realize the error of their ways.

peculiar disease. Its fat was said to have been of a peculiar color.

Report of Hospital Assistant Ram Sanup, who was deputed to attend

"I beg to inform you that according to your orders I went to the villages of Tongasi and Pakhi, and also in accordance with your instructions took medicines for Trichinosis. The symptoms noticed in almost all the cases were as follows—Two or three days after taking the poisonous flesh, first of all there was puffiness of the eyelids, diarrhoea, vomiting, high fever and oedema of the hands and feet, especially of the feet. Along with these symptoms there was pain and contraction of the muscles in different parts of the body. The people told me that the flesh they took was not properly cooked. It was also said to be of a bad color. There have been no deaths since I came here. The treatment that I gave was a purge of castor oil whenever there was any diarrhoea, and afterwards the following mixture—

R/—Acid carbolic
Tinct Iodi
Glyc
Aque

. m 1
m 11
3ss
5i

M ft twice daily

This treatment proved very good, through these measures the oedema of the hands and feet and the high fever subsided at once in most of the cases. In the villages of Tongasi and Pakhi there have been altogether 17 deaths. All the remaining cases are doing well."

INCINERATORS IN CANTONMENTS

By W A MORRIS,
RT COL, RAMC,
Munree

I HAVE read with great interest the articles which have appeared lately regarding incinerators for excreta in cantonments.

Under the orders of Surgeon-General Hamilton, CB, IMS, PMO, 2nd Rawal Pindi Division, I have constructed 11 incinerators and more are being erected. These are made according to the lines mentioned in Lt-Col Haines' article.

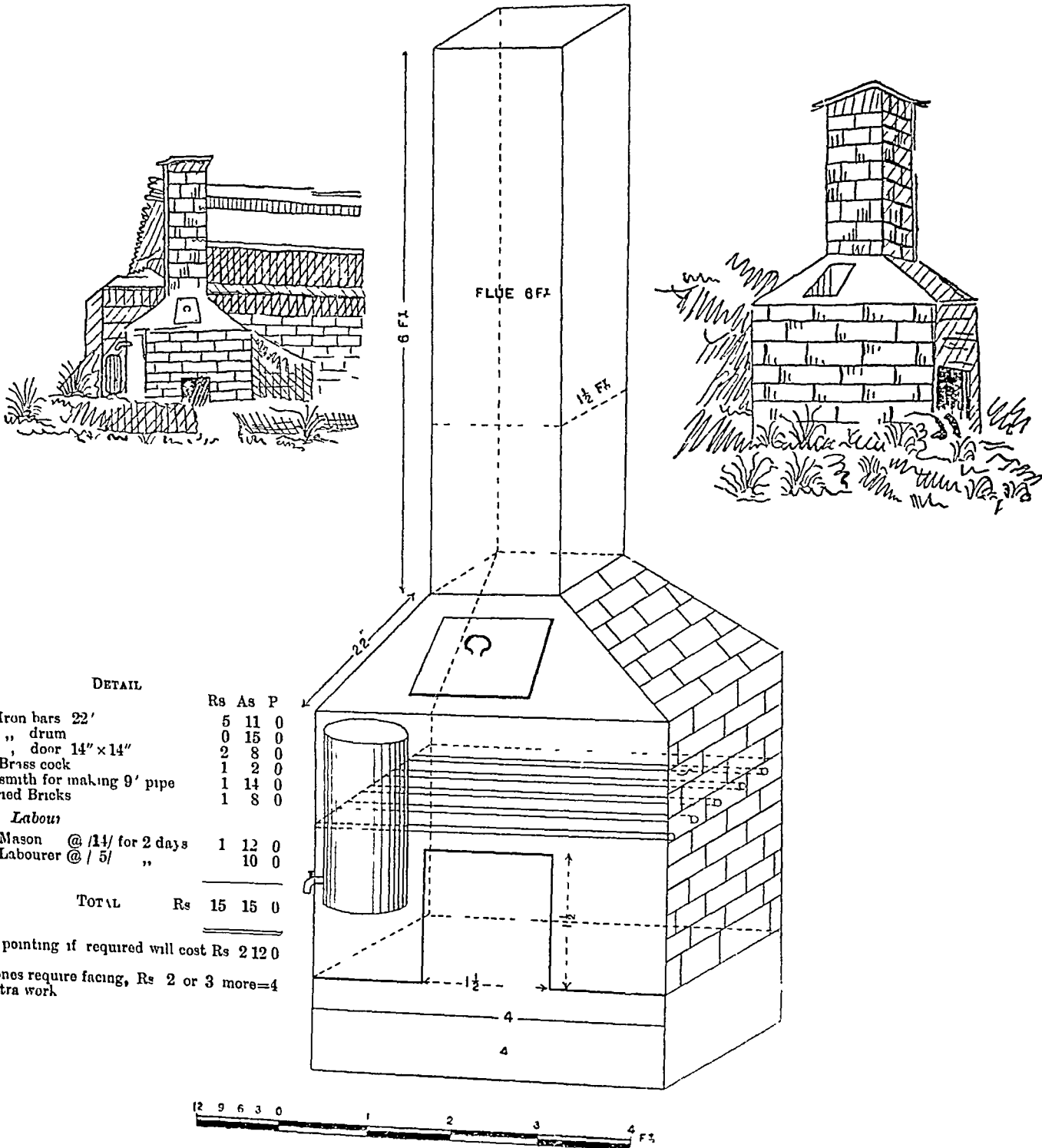
At first I was sceptical as to their advantages, but the experiments and trials which have been made here have firmly convinced me that they have come to stay. I hope those who originated the idea (Surgeon-General Hamilton, CB, IMS, and Lt Col Haines, RAMC), will forgive my temerity in offering them a sketch of the incinerator which we were able to build. These incinerators abolish all carriage from the latines to the trenches, and if latines in cantonments be carefully grouped, and an incinerator built by each group, this carriage will be further decreased and better regulated. By then

INCINERATORS IN CANTONMENTS

By LIEUT COL W A MORRIS, R.A.M.C.,

Murree

FRONT ELEVATION



DETAIL

	Rs	As	P
12 Iron bars 22'	5	11	0
1 " drum	0	15	0
1 " door 14" x 14"	2	8	0
1 Brass cock	1	2	0
Blacksmith for making 9' pipe	1	14	0
Sundried Bricks	1	8	0

Labour

1 Mason @ /14/ for 2 days	1	12	0
1 Labourer @ / 5/ "		10	0

TOTAL Rs 15 15 0

Lime pointing if required will cost Rs 2 12 0 more

If stones require facing, Rs 2 or 3 more=4 days extra work

introduction into barracks the natives concerned with carriage of excreta will be materially lessened and one man at each incinerator at Rs 7 per mensem, half batta and compensation for dearth of provisions, would admirably perform every duty concerned with firing and watching the destruction of its contents

The following points have been often raised —

SUPERVISION

Who will look after this incinerator? "You must have a man specially trained for this work?" and so on, have been frequent questions put to me by visitors. The only attention (not supervision) required is, for the attendant to collect as far as possible litter and leaves, etc., and keep them dry in a covered place, to lay 6 inches of litter on the bars, and on them place a layer of solids, followed by another layer and litter up to the top and finally to apply a light at the bottom. For the liquid excreta, he empties this into the *balti* on the incinerator, and after it is boiled runs it into a shallow trench. The solids and litter burn out to a white ash and fall through the bars and can be readily removed by hand. I cannot conceive anything simpler.

SMELL

The solids burning with the litter emit no objectionable smell in the incinerators working here, but if the two are 'lumped' on to the litter together there is a tendency to smell, but when separated there is a "burnt litter smell" only that has nothing offensive about it.

ASH AND HEATED LIQUIDS

The former can be stored and used for manure or when mixed with other materials forms a good 'binding' for paths. There is no smell at all attached to it after it is cool.

The liquids are poured into a shallow trench and covered up. This product is perfectly harmless. I venture to send these short notes which I hope will form one of the many evidences of this new and important suggestion for the disposal of excreta in cantonments.

A Mirror of Hospital Practice.

CASE OF OLD STANDING DYSENTERY TREATED BY VACCINO-THERAPY (AS RECOMMENDED BY CAPT FORSTER, I M S, I M G, JUNE 1907)

By L P STEPHEN, M B (Aber), D P H (Lond),
D T M & H (Camb),

CAPT, I M S

C M, BRITISH OFFICER, æt 29, contracted acute dysentery 5 years ago. Invalided home,

1902, with symptoms of threatened abscess of liver. Not allowed to return to duty for two years, during which time he had constantly recurring diarrhoea and liver symptoms.

Rejoined in Hong-Kong, and three weeks afterwards slimy diarrhoea recurred which was not amenable to treatment. Again invalided home *via* Japan and Canada with the idea that a change of climate would be beneficial, but on the journey he was laid up for several weeks owing to a renewed attack of his trouble. While in England he consulted various "specialists" and underwent all the usual forms of treatment including Ipecacuanha, Magni Sulph, Yellow Santonin, etc., the last named being the most efficacious.

Recovering sufficiently to be allowed to return to India after 20 months, the usual symptoms of diarrhoea and slime recurred on the way out, and about a month after landing in India he had again a severe acute attack of dysentery (tenesmus, blood, and slime), which was relieved by Ipecac treatment and rest.

In short, for the last 5 years this officer has scarcely been able to do an ordinary day's work without a recurrence of symptoms, and during the whole of this time he has been carefully dieted.

Condition before treatment by Vaccino-therapy was — Pale and emaciated, frequent diarrhoeic stools (never less than 4 or 5 daily) with abundant slime, uncomfortable feeling in abdomen, and a thickened and tender ascending colon, and inability to undergo any exertion without aggravation of symptoms—only the strictest of diet was allowed.

He has now had 3 inoculations, the first having been given 9 weeks ago, and since then there has been steady improvement, and all medicines have been abandoned. After the first inoculation he began to improve—uncomfortable feelings in abdomen disappeared, slime in the stools diminished, and the motions from 4 or 5 daily came down to 2, and became formed. His present condition now is, that all uncomfortable feelings in abdomen have gone, stools are two a day, perfectly formed, and normal, and without slime, he has started to gain weight, eat ordinary diet including pastries, etc., and does ordinary work without ill effect, and the ascending colon can now scarcely be palpated and all tenderness has gone.

In fact, I consider, as the patient himself does, that he is now perfectly cured. The whole case appears to afford a most striking proof of the efficacy of the vaccine in old standing and intractable cases of dysentery.

I have to record my indebtedness to Capt Forster, I M S, for his courtesy in supplying me with the vaccine.

A CASE OF FACIOLOPSIS BUSKI (DISTOMA BUSKI v CRASSUM) AND AMPHISTOMA HOMINIS

By H B STEEN, M.D.,

CAPT I.M.S.,

Civil Surgeon, Sylhet

A HINDU male, aged 27, was admitted to the Sylhet Dispensary on 24th May. He was greatly emaciated, there was œdema of the legs, he was anæmic and in a semi-conscious condition. He could give no history. He passed stools frequently consisting of thick mucus, tinged green. A dose of salol followed by castor oil was administered and 19 distomes were passed. After this the patient refused all treatment, became unconscious and died four days after admission.

POST-MORTEM

Stomach contained thick mucus, and there were a few punctiform hæmorrhages.

Small Intestine—The outer coat showed several depressions corresponding to the attachment of the distomes inside. Enormous numbers of the lozenge-shaped distomes could be seen through the wall. They extended from within a foot of the pylorus to the cæcum and numbered 734. They were embedded in a greyish thick gruelly mass. There were a few punctiform hæmorrhages. There were also found, one *Amphistoma Hominis*, one round worm, and several *Ankylostomes*.

Large Intestine—This contained 430 *Amphistomata Hominis*, one in the Vermiform appendix. The descending colon contained numerous ulcers of a chronic type and the coat was much thickened.

The mesenteric glands were enlarged.

The liver was normal and gall-bladder was enlarged to about three times its natural size. It contained four small calculi. Bile ducts were normal.

Total number of parasites —

<i>Fasciolopsis Buski</i>	753 (Includes 19 passed during life)
<i>Amphistoma Hominis</i>	431
<i>Tricocephalus Dispar</i>	8 (Numerous)
<i>Ankylostoma Duodenale</i>	? (Not counted)
Round Worm	1
	<hr/> 1,193 <hr/>

The surface of the *D. Buski* appeared to me to be perfectly smooth. Manson describes it as being covered with "minute spines".

I record the case, not only on account of the large number of parasites, but also because it seems reasonable to suppose that death was due directly to the irritation caused by such numbers of these trematodes. The *ankylostomata* were not "numerous". I am indebted to Assistant Surgeon Taruk Nath Deb for his assistance in the case.

SIMPLE DEPRESSED FRACTURE OF THE SKULL WITH CEREBRAL COMPRESSION

By O St J MOSES, M.D., F.R.C.S. (Ed.)

CAPTAIN, I.M.S.,

Civil Surgeon, Barisal

WHATEVER the manner in which Surgeons of the present day regard the recommendations of Astley Cooper, Abernethy and Dupuytren for non-interference in a case of simple depressed fracture of the skull without cerebral compression, it must surely be accepted as an axiom in modern surgery that wherever symptoms of such compression are present it is absolutely imperative to make a free incision in order to allow of an examination of the state of the skull and an elevation or a removal of the depressed portion of bone along with any extravasated blood within the cranial cavity. Experience bears this out, as it also shows that in the majority of cases the severity of the symptom of compression are out of all proportion to the slight depression of bone, and that the latter is by no means the sole or even the chief cause of the manifestations of cerebral compression, as an intracranial extravasation of blood is generally present. These, in addition to other points, were admirably exemplified in a case which recently came under my care, and a short account of which may therefore not be wanting in interest.

On January 16th, 1907, Basanta, a Hindu male, aged twenty years, by occupation a labourer, was carried to hospital at Dhubri, in a completely unconscious state. The history given by his friends was that, while engaged in lopping the branches of a tree, the man fell, head foremost, from a height of some five and twenty feet, on to the soft ground below where he lay senseless, and whence he was picked up and carried to hospital. At the time of his admission the patient, as I have said, was quite unconscious, his breathing was slow and stertorous, pulse slow and full, eyes closed, pupils of natural size but sluggish in their reaction to the light stimulus. The temperature was normal, there was a marked "black eye" on the right side, and the patient had no control over his bladder and rectum. He preferred to lie constantly on his right side with body fully flexed and knees well drawn up. In addition, there was a paralysis of the muscles of expression on the right side, the face, and a motor paralysis of the right upper and lower extremities, preceded by some twitchings in them.

The patient was at once put to bed and his head lightly shaved. On the condition of the part being examined at this stage, it was found that there was a large swelling over the entire region of the vertex on the right side, extending from the midline above, well down to the ear laterally, and from the superciliary ridge of the frontal bone anteriorly, to the superior curved line of the occipital bone behind, but the skin was everywhere intact with the exception of a slight bruise just above the right parietal eminence. The right side of the face also showed a puffy swelling. By dint of cold applications to the head and absolute rest in bed, the condition of the patient was somewhat improved, so much so that whereas at first even loud shouting failed to elicit any response, it became possible at the end of six hours to rouse him and get him to open his eyes, by such means. The responses were, however, only momentary, as the patient immediately afterwards relapsed into his previous comatose condition. He was also able to swallow milk in teaspoonfuls at intervals. On the day but one following his admission to hospital, the patient's right eye showed just the trace of an external squint, the eyeball being directed the least bit outwards owing to the unopposed influence of the sixth cranial nerve. Further, a slight degree of prominence of the eyeball, a ptosis of the upper lid and a dilatation of the pupil came into evidence at this time, owing probably, as Hutchinson has pointed out, to pressure on the motor oculi and fourth cranial nerves caused by an extension of the

SIMPLE DEPRESSED FRACTURE OF THE SKULL WITH CEREBRAL COMPRESSION

BY CAPT O ST J MOSES, MD, FROS (Ed), IMS,

Civil Surgeon, Barisal

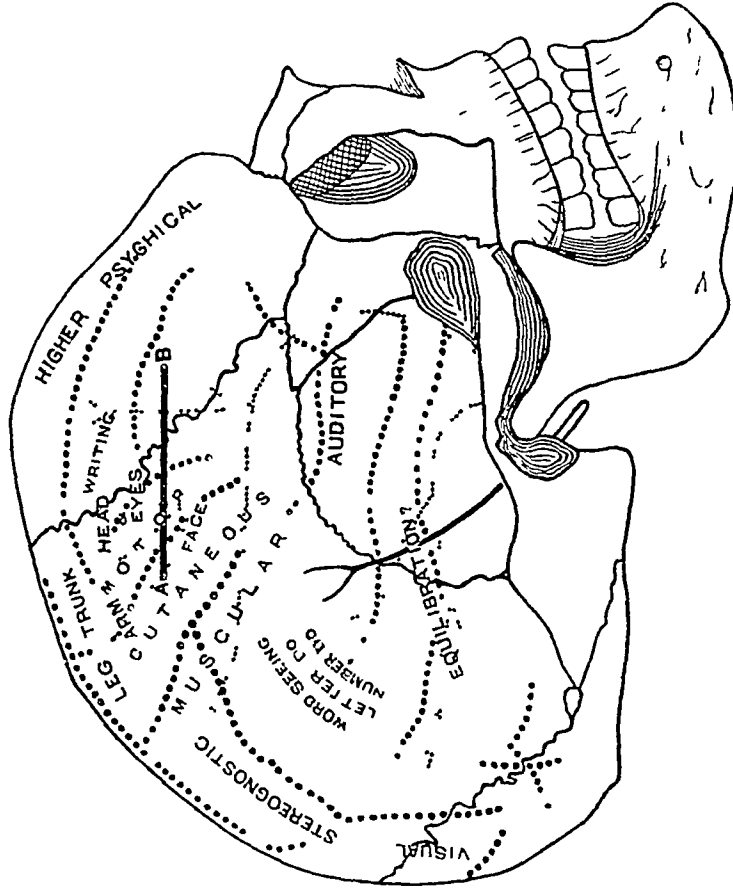


Diagram showing the position of line of fracture (A B) in relation to bones and sutures of skull, anterior branch of middle meningeal artery, and to areas on cerebral hemisphere, on right side (Reduced to half life size)

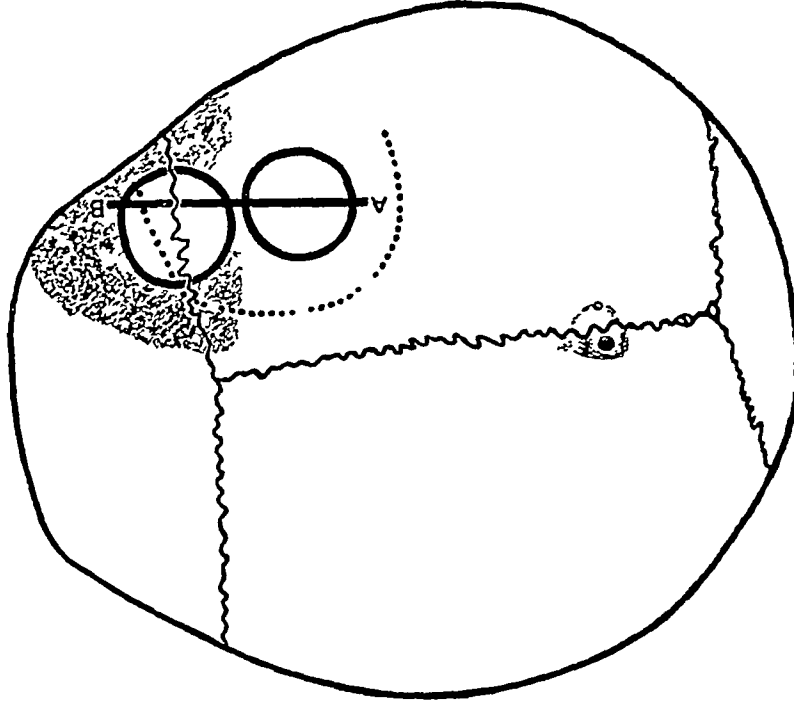


Diagram to show vertical view of line of fracture (A B) and the relation to it of trephine openings, skin incision (dotted line) and position of blood clot discovered (shaded dark)

clot downwards towards the base. It is likely, however, that in this instance such pressure was not exerted on the nerves in their course within the outer wall of the cavernous sinus, but either as they lay in juxtaposition before entering the sinus or else when the fourth nerve crossed the third on entering the sphenoidal fissure, for there was apparently no implication of the other structures associated with the cavernous sinus, and no sign of obstruction of that blood-channel in the way of venous congestion of the eye. During the following days the patient improved but very slightly, perhaps enough to raise a hope in his favour and yet not so much as to warrant a belief in his being otherwise than still very much depressed and unable to bear any further shock, such as that of a severe surgical operation. The unconsciousness remained practically the same as before. The swelling of the scalp went down slightly from day to day, but it still persisted sufficiently to prevent careful manipulation of the part revealing the existing condition of things. Yet the symptoms left no doubt as to the presence of compression, probably of fracture with depression of bone as well as extravasation of blood internally. On the 23rd the swelling over the head subsided for the first time to such an extent as to afford the faintest indication of a depression corresponding in site to the anterior portion of the right parietal region. I decided therefore to operate at once with a view to examining the state of the skull and removing the causes of cerebral compression. Accordingly, the patient was prepared and on the following morning I made a semilunar incision down to pericranium, with its convexity upwards and taking in the area which appeared to be involved. On turning down this flap, I at once discovered a linear fracture of the vertex, with slightly irregular edges, extending from behind forwards and outwards two and a half inches in length, involving the parietal bone for the posterior two inches of its length, passing obliquely across the right half of the coronal suture and running for the anterior half-inch of its length into the frontal bone. The posterior end of the line of fracture was an inch and a half from the sagittal suture, while the anterior end was two inches from the mid vertical line of the frontal bone. The portion of bone on the inner side of the fracture was at its normal level, but that on the outer side was depressed about a twelfth of an inch at the middle of the line of fracture and the pericranium was lacerated all along. I next incised the pericranium in a crucial manner, one incision corresponding to the fracture in the bone, the other being at right angles to the first, and I lifted that structure in four angular flaps. This done, I applied a seven eighth inch trephine over the posterior portion of the fracture placing the centre pin on the firm undepressed bone on the inner side. The disc which was lifted out separated in two slightly unequal portions owing to the fracture running through it, and these pieces were preserved in lint wrung out of warm sterilized saline solution. I next made an attempt to lever up the depressed portion of bone further forward on the outer side, but as it was impossible to effect this with the use of moderate force, I decided that it would be better to remove a second disc in a similar manner, about an eighth of an inch anterior to the first opening. In order to do this I had to make more room by means of a short incision directed forwards, through skin and underlying tissues from the anterior part of the original semilunar incision, and to lift the pericranium to a corresponding extent. All this was accomplished without difficulty, and I might add, so far without the use of an anesthetic, for the unconsciousness was so deep that none was found necessary. I did not regret this circumstance, as during the whole process of trephining the patient was so depressed as to make the avoidance of chloroform an advantage.

It was manifest from the beginning that the signs of compression that had marked the case so well throughout, were not caused solely or even chiefly by the slightly depressed plate of bone, but that severe

bruising or laceration of the internal parts must be present along with intracranial extravasation of blood. This opinion was soon corroborated by the discovery of a large bloodclot which was rendered visible as soon as the anterior disc of bone was removed and which lay between skull and dura mater. The gentle removal of this accumulation was the next step in the proceeding, and to it the patient responded at once, on the operation table by heaving a long drawn sigh, as of relief, and by opening his eyes. A little chloroform was administered at this stage, and, the removal of the clot having been completed, the first disc of bone was cut in pieces and carefully replaced. In the case of the second or anterior opening, the larger portion of the disc was replaced in pieces, on the postero internal aspect, while the smaller antero external segment of the circle was left open, primarily for the purpose of securing free drainage in the possible event of further accumulations. After this, the pericranium was replaced and stitched, and the skin flap was similarly treated, with the exception of a small opening for drainage which was left opposite the aperture in the bone and leading to it in a valvular, oblique manner. No internal medication was found necessary beyond a little bromide to prevent restlessness and an occasional enema when the bowels recovered their tone and constipation supervened. The dressings were changed every other day and, as healing occurred by first intention, the stitches were removed early, at first alternate ones and then the remainder. When to this I add that within a fortnight of the operation the patient ventured on walking round the hospital grounds, it may be imagined how rapidly and to what extent the motor paralysis of the upper and lower extremities disappeared. A few days later, on February 11th, finding there was a progressive recovery from all symptoms of compression and no semblance of a discharge from the wound, I closed up the latter entirely and allowed the patient a more liberal diet. On February 12th, the man took a short walk beyond the limits of the hospital. His limbs were now entirely under his control, and aided by gentle massage, he was rapidly gaining strength in them. The ptosis too had completely disappeared and the pupils as well as the various eye conditions returned to normal. The right facial muscles, however, still manifested a little weakness, but ten days later even this condition practically vanished and now only a close observer could tell that any abnormality had existed in them. The patient's memory for past events, which had quite forsaken him after his accident, returned early and improved steadily after the operation, and was soon completely restored. On February 23rd, within a month of the operation, the man had entirely recovered and the last I saw of him was on that date, at the railway station to which he had walked by himself from hospital, a distance of some three quarters of a mile. He was perfectly fit and very cheerful, and only a month previously he had lain on the brink of the grave, hovering between life and death!

The points of interest in the case were many. First, there was the entire absence of an interval of return to consciousness, and there was no differentiation into the three stages said to be distinct in a typical case of extravasation between dura mater and bone, namely, concussion, a return and some continuance of consciousness, and gradual supervention of coma. This would indicate some cerebral laceration and a rapid hemorrhage, in this instance probably from a twig of the anterior branch of middle meningeal artery. Jacobson, in the Guy's Hospital Reports, says that in a number of cases collected by him the interval of consciousness was wanting in fully 33.3 per cent, and was only very slightly present in 15.9 per cent of instances. Then, there were points connected with the diagnosis of the case. The extreme tumefaction of the scalp rendered all positive diagnosis of fracture entirely out of the question in the beginning, although there was indirect evidence of

the presence of compression. The fact that the symptoms of this continued uninterruptedly from the very first pointed to a depressed fracture, while their early severity indicated the presence of blood extravasation, and the fact that both existed was rendered obvious in the course of the operation. Again, with reference to the matter of treatment, the case was an excellent illustration of the advantages of early operation in the event of a simple depressed fracture of the skull with cerebral compression. Many a life has been sacrificed to delays on the part of patient's friends in allowing the sufferers to be submitted to operative treatment, or to hesitation on the part of the surgeon in undertaking such a step at the right time. Temporary methods may have their advantage in certain cases of fracture of the skull, but when signs of cerebral compression exist and persist there appears to be no reason whatever why the surgeon should not deal with the case by operative methods at the most suitable early opportunity, first to examine the state of the skull, and next to relieve the compression by the use of the trephine and by the removal of intracranial accumulations. The risks of expectant treatment are greater by far than any connected with opening the skull, provided the surgeon secures asepsis and uses ordinary care in the employment of the trephine. Still another point of interest is one associated with the symptoms that were present in the case under review. I have mentioned the motor paralysis of the upper and lower extremities that followed the injury, persisted for some days, and disappeared shortly after the operation, and I have drawn attention to the fact that this condition manifested itself in connection with the right side, the same as that on which both the injury to the head and the facial paralysis occurred. The explanation of this feature in the case is not easy to give, unless it is taken for granted that injury to the brain was, by counter stroke, produced in the left cerebral hemisphere, that is, opposite to the side of the head that had struck the ground. If such was the case, the presumption is that with the relief of tension due to the trephining, and the rest in bed, aided with bromides and such favourable circumstances as the youth and previous good health of the patient and the fact that the injury to the left cerebral hemisphere was at its upper and anterior part, and limited in extent, a rapid return took place to the normal condition of things. But even this explanation does not show why, with a depressed fracture of the right parietal bone and a large clot pressing on the right side of the brain there should have been no hemiplegia on the left side of the body. I give an exact account of the clinical features of the case as very carefully observed by me, and I shall be glad of an elucidation on this irregular point in the symptomatology. In all classical accounts of similar cases it is usual to read of injury of this kind to one side of the head, being followed with face and eye symptoms on the same side and paralysis of the extremities on the opposite side. The feature as it existed in this case gives it an additional interest for the very reason of its being difficult of explanation.

AN IODIDE ERUPTION

BY A. B. FRY, M.B. (LOND.),
CAPTAIN, I.M.S.

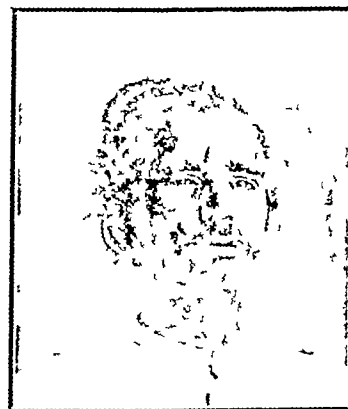
ASA SINGH, age 29, a Sikh sepoy of 34th Pioneers, was readmitted to the Depot Hospital with very severe sciatica. He had been away on sick leave, and I found by his medical history sheet that he had been seven weeks in hospital with a fever, diagnosed as a 'doubtful Malta fever'. He was wasted and the left leg was kept flexed, and he had most excruciating pain on movement.

Local applications even tried for a week without benefit, and I then ordered him Iodide of Potassium. Departing from my usual routine, I ordered the hospital assistant to give him a mixture containing 15 gr of Pot Iodide twice a day.

On the evening of the second day when the hospital assistant was about to give him the fourth dose, the man complained of burning sensations in the face and the hospital assistant noticed a red papular eruption and very wisely withheld the medicine. I saw the patient the following morning and was horrified at his appearance. The whole face was swollen and the nose, cheeks, forehead and angles of the mouth were covered with large granulomatous masses exuding pus. The photograph which was taken the next day gives a fair idea of his appearance though the general oedema had subsided. There was no rash on the body and no constitutional disturbance and the sciatic pain had gone. In fact, instead of groaning on the bed, the patient scrambled up into a chair and took a keen interest in his photograph.

The eruption dried up and faded away very quickly, but he still (two weeks later) has pigmented patches at the site of the biggest lesions.

The case is interesting as a severe one after a total of 45 grains of Iodide and also from the



complete absence of iodism, there was no redness of conjunctiva, lachrymation, coryza nor inflammation of respiratory tract.

A case like this happening in private practice with a lady patient would be ruinous, and it has warned me to be content with a commencing dose of five grains.

LARGE STONES IN THE BULBOUS PORTION OF THE URETHRA

BY T. S. BEAUCHAMP WILLIAMS,
CAPT. I.M.S.,
Residency Surgeon in the Persian Gulf

The patient, a fairly well developed Persian boy, aged seven years, was admitted into the Residency Dispensary, Bushire, on January 1st, 1907,

complaining of a swelling in the scrotum and of difficulty in micturition

The history elicited from his father—a very ignorant man—was to the following effect, *viz* —

Two years ago, the boy Ibrahim had retention of urine for 15 days. At the end of that time, after application of native medicines, the urine reappeared, and there has been no acute retention since. From that first illness up to present time, the boy has suffered from pain in the region of the scrotum. One year ago, the parents noticed a swelling in the scrotum, hard to the touch, which reached its present size about six months ago.

On making an examination of the boy's scrotum, I saw a large swelling, about the size of a small hen's egg, and the testicles were obvious, being pushed out to either side by the central swelling. The centre of the swelling was about the middle line. On palpation, I felt the two testicles, which were quite healthy, and then, occupying the centre of the scrotum, I felt a hard mass, which filled the scrotum.

On passing a sound, the moment it had passed the body of the penis, and reached the scrotal region, it hit against a mass of stone.

The urine was strongly ammoniacal. However, the boy's general condition was very good.

Operation—I made an incision over the centre of the swelling, cutting straight down on to one piece of stone. As I reached the stone, urine gushed out, and this proved to be a much dilated portion of the urethra. The incision was enlarged sufficiently to enucleate the stone which was hemispherical. Along with it came out a very small piece which was faceted against the larger piece.

After these two stones had come out, I inserted my finger again, expecting to enucleate the other mass without any difficulty. To my surprise, however, at first I could not feel any stone, my finger being met by thickened mucous membrane, which stretched up to the roof of the urethra. On pushing my finger to the left, against this membranous septum, I could feel the other hard mass on the other side of it. I then caught hold of the stone through the scrotum and moved it about against the septum, and just to the left side of the roof of the urethra I felt a small piece of stone which evidently belonged to the mass on the other side of the membrane. The communication was very small, and as there was no possibility of taking the stone out by that route, I made another incision over the second stone. This stone, I found, was tightly fixed in a pouch to the left of the urethra, and at first I could not move it. This proved to be due to its very irregular shape, allowing parts of it to be gripped by the tissues. One part of the irregular mass was, as previously stated, projecting into the urethra, and was faceted where the other large stone played against it. When dry, the stones weighed together 5 dr. 29½ grains and

were composed chiefly of phosphates. Individually they weighed—

A (which was in the urethra) 2 dr. 38½ gr

B (which was in the urethra) 5½ gr

C (which was in the pouch) 2 dr. 45½ gr

The urethra was united with interrupted sutures, while the pouch was drained, the opening in the scrotal integument being closed except posteriorly. The wound healed well, but when he left for home on 5th February there was a distinct fistula, and about half the urine passed along the penis, and half came out in the perineum.

TWO MEDICAL CASES

By BIMAN BIHARI BASU, M.B.,

Teacher, Temple Medical School, Patna

A S, a Mahomedan male, aged 40, resident of Kosi, near Nawada in the District of Gaya, was brought to the Bankipuri General Hospital on the 3rd of November 1906 for the treatment of palpitation, progressive emaciation and weakness.

Previous history—His complaints began about a year ago. At first he used to get palpitation after meals lasting for a short time and he was troubled with a throbbing noise in his ear, when lying down. His palpitation gradually increased and would come on after meals during the day and last for four or five hours. After his meals at night he would go to bed and so did not notice any palpitation. He used to suffer from slight fever at intervals of a fortnight or so. His appetite was good. His urine was normal in quantity, but he used to get marked sweating at times all over his body. He has become very much emaciated, and his complexion has become darker. He said that latterly he had tremors in his hands and feet owing to weakness. He has noticed enlargement of his thyroid gland for the last six months. No history of injury or of emotional excitement preceding the onset of his illness. There is no history of similar illness in his family.

Condition when examined—The patient was emaciated, eyeballs were prominent, the sclerotic was visible to about one-eighth inch below the lower margin of his cornea. The upper margins of the cornea were just covered by the upper lids. Vision was normal. Graefe's sign was not present. Stellwag's sign was slightly marked.

Pulse was regular, moderately full, 100 per minute. There was visible pulsation in the region of his carotids. The impulse of the heart was forcible to a certain extent. The apex beat was in the fifth space, half inch interval to the left nipple line. Heart sounds were clear. The area of cardiac dullness was not increased.

The thyroid gland was enlarged (moderately), more so on the right side of the neck. It was soft in consistency, and there was marked

pulsation over it. A systolic thrill was felt over the right side of the enlarged thyroid. A systolic bruit was heard on auscultation over the same situation.

Fine involuntary tremors were noticed in the hands when they were held out.

The lungs were healthy and there was no enlargement of liver or spleen.

His urine was examined. It was of acid reaction, specific gravity 1.012, without any albumen or sugar.

The presence of exophthalmos with goitre, palpitation and tremors led to the diagnosis of exophthalmic goitre. The patient was advised to have part of his thyroid gland removed, but he did not agree to the operation.

A CASE OF LEUCOCYTHÆMIA, SPLENO-MEDULLARY FORM

Naiyan, a Hindu male, aged 34, *Gowala* by caste, was admitted into the Bankipuri General Hospital on the 15th of October 1906 for the treatment of fever with enlarged spleen.

The previous history—The patient stated that he had been suffering from attacks of fever and gradual enlargement of spleen for the last three years. For the last two years he used to suffer from attacks of priapism once or twice every month, usually coming on at night and subsiding towards morning. About a year ago he had profuse epistaxis lasting for four days. He had another attack of epistaxis about six months ago lasting for two days. For the last two or three months he had continued fever. Seventeen days previous to his date of admission he got priapism which would not subside and continued throughout his stay in the hospital. He gave no history of intermittent fever with shivering before the onset of his present illness. He has lost much flesh during the course of his illness. He gave no history of similar illness in his family.

Condition on admission—The patient was emaciated and anæmic, but did not look quite pale. His face was rather anxious and he complained of difficulty of micturition, priapism and pain in his penis and over the left side of his abdomen. His abdomen was enlarged and bulged out along the left side. His temperature on admission was 100°F and ranged between 103.5°F to 100°F. There was no dropsy.

Spleen was found enlarged and hard, extending down to within 2 inches above the pubis. It filled up the whole of the left flank of the abdomen, and its right border reached to about 2 inches to the right of the median line below the umbilicus, while above the umbilicus, it reached up to the median line. Two notches could be distinctly felt on the right border of the spleen. Upwards the splenic dulness extended up to the level of the upper border of the sixth rib in the mid-axillary line. The splenic area was somewhat tender and painful.

Liver was found enlarged downwards to 2 inches below the costal arch and upwards up to the fifth rib in the right nipple line.

Lymphatic system—No enlargement anywhere.

Blood—On examining a stained blood slide, the white corpuscles were found to be very numerous, and they consisted chiefly of large mononucleated forms (myelocytes of Ehrlich), ordinary polynuclear leucocytes and eosinophiles. The lymphocytes were very few. A few nucleated red blood corpuscles were also detected. On taking a differential count of the leucocytes (making a count of one thousand leucocytes), the following proportions were obtained: lymphocytes 1.7 per cent, polynuclear leucocytes 37.7 per cent, large mononuclear leucocytes (ordinary) 9.5 per cent, myelocytes 48.2 per cent, eosinophiles 4.9 per cent. On taking a blood count with Gower's hæmocytometer (adding methylin blue to the diluting fluid to stain the white corpuscles), the number of red corpuscles were found to be 2,520,000 and that of white corpuscles 780,000 per cubic millimetre of blood. Hæmoglobin was found to be 50 per cent.

Heart was slightly pushed upwards, otherwise normal. Pulse was moderately full, regular and 100 per minute.

Lungs were healthy.

Urine was scanty, sp. gr. 1.015, acid in reaction, contained a trace of albumen, but no sugar, nor any excess of phosphates.

Nervous system and special senses—Normal.

Progress of the case.—During his short stay in the hospital, he continued almost in the same condition. He was treated with large doses of bromides (3i every four hours), tincture belladonna and ice bag over the penis but without any relief. Hypodermic injection of morphia was tried, but even when sleeping under the influence of morphia, the priapism was present. The effect of arsenic could not be tried as the patient insisted on leaving the hospital and was discharged at his request on the 23rd October 1906.

Jambul seeds, from a West Indian plant, the *Syzygium jambolanum*, was introduced, in 1889, by Graesse, after experiments in phloridzin-diabetes in dogs, but as this is not the same thing as human diabetes, successful results have not followed to any great extent. Binz, von Mering, and especially Bohlund, have worked at the subject, while Hildebrandt has carried out some interesting experiments on the action of these seeds. He finds that the extract limits the formation of sugar in the alimentary canal, and of glycogen in the tissues. Its effects vary in each case. Gerlach found it useless, Lewaschen obtained uniform results in 8 cases, using 20 to 40 g of the freshly prepared powder. Kaufmann's results were not altogether satisfactory, using the fluid extract, which von Noorden considers the best form, when well diluted with hot water, to avoid alimentary disturbances. It appears to be suitable as an aid to dieting.

Indian Medical Gazette.

OCTOBER, 1907

THE NEW ANTIPLAGUE CAMPAIGN.

THE publication in the *Gazette of India* of the gracious letter from the King-Emperor and of one from His Excellency the Viceroy together with the letter from the Home Secretary to all Local Governments and Administrations marks another departure in the plague policy of the Government of India.

For a dozen years past the policy of the Government of India as regards plague has been the butt for a vast amount of irresponsible criticism, both in India and in England, in the latter country especially at the hands of critics whose advice has not always been taken at their own valuation of it.

In a country like India a fell epidemic like plague cannot be considered only from the point of view of pure science, and in a country which contains an enormous number of people still ignorant, superstitious and gullable, ready to listen to the wildest and most absurd rumours put forward by interested or mischievous persons,* it behoves, nay it is the duty, of such a Government to go warily and to be sure that the measures proposed for the prevention of the epidemic are not calculated to defeat themselves.

* After we had written the above we came across the following remarks in the *Lancet*, p. 476, of August 17th, in a sensible and practical letter by Dr. A. Elliot, of London, who has had much practical knowledge of plague in Southern India—"Anyone who has the smallest knowledge of Indian life knows the innumerable obstacles that rise up to baffle your efforts in every direction. Eliminate Bombay, Calcutta, Madras, and at most three or four other large cities in India, and what do you find? Millions of people, uneducated, bound down by caste rules, living on superstition, ready to believe the word of anyone so long as it contains the slightest trace of the supernatural. People whose customs of to-day have come down to them since India was. People who see in every passing cloud the finger of some male god. Go back to the cities that have been eliminated. You will find three fourths of the native population still hugging the superstitions of their forefathers, still anxious to be left alone with their troubles. And what of the educated fourth? In the majority of these educated minds there still lurks the shadow of superstition, and the man with the university degree will, when his child yawns, crack his finger joints so as to frighten away any evil spirit that may be hovering round ready to find a lodging in his child's inside. In the face of all this the task seems hopeless."

"There is another element, and this of a more serious nature, that has to be contended against. Many of these educated persons use their higher intellectual powers not for the general good but for their own individual advancement. They do not scruple to make use of the superstition and ignorance that surround them on all sides."

by being in advance of, and opposed to the ingrained feelings, or prejudices of the peoples of the country.

It is very easy for arm-chair critics in London to write voluminous lectures and letters pointing out the obvious, on *à priori* principles, but any attempt to deal successfully with such a disease as plague must be founded, first, on accurate knowledge, and secondly, must not be too violently or obviously in opposition to the feelings of the people for whose benefit the measures are intended. Theoretical critics and learned bodies at home may point and even point truly to this and to that as a remedy but the fundamental fact remains that unless what are called "plague measures" carry the people with them, and unless they are supported by the people themselves, they are doomed to, at the best, a very partial success only.

It cannot be denied that when plague first appeared in Bombay in the hot weather of 1896 it was a disease unknown to the existing generation of medical men. It had existed for some time previously in Hong-Kong, and but little attention was paid to it, and the medical press in England and the Continent entirely failed to recognize the terrible importance of the China epidemic. It was not till the pest appeared in Bombay, and the matter was seriously taken up by the various Local Governments in India that the world at large realized the danger which lay before them.

Those who remember that summer of 1896 will remember the difficulty of finding any information about the disease. In India all we could refer to was an article by Col. Hutchinson (then I. G. of Civil Hospitals, U. P.) on the *Mahamari* or endemic plague of Gairwal and Kumaon and a lecture by the late Surgeon-General Harvey on "Plague, a disease of older times." Ordinary text-books were even more useless. All Europe believed that the day of plague was past, and it excited less interest than does either typhus (another disease now little seen) or the sweating sickness at the present time.* The first measures taken by the Government of India were, therefore, based upon the knowledge then available, and if they failed, it was because

* If an outbreak of *typhus* occurred in Europe at the present moment, would we find it now any better prepared in knowledge than India was as regards plague in 1896? Very little is yet known of the real *etiology* of typhus and it is probable that the old theories would be found wanting. So, for the germ and its possible carrier, a tick, are only guessed at.

nothing was then known of this old-world and half-forgotten disease. Hence the vogue of sanitary cordons, railway examinations of passengers, and disinfection of floors, &c, &c. Since those days our knowledge has largely widened till it seems as if we were on sure ground, and this had been effected by the devoted labours of a very large number of medical officers in India and their confrères in other countries threatened or affected by the pandemic.

For centuries the connection between the rat and plague has been traditionally known, but it is only within the past few years that the connection between rat-plague and human-plague has been scientifically established. The next great step forward in our knowledge of the etiology of the disease was due to the scientific imagination of Capt W Glen Liston, when he gave considerable evidence to show the important factor the rat-flea was in the spread of the disease. The appointment by Lord Curzon of the recent Plague Advisory Committee had led to a vast amount of good work done in the Bombay Laboratory and elsewhere by Major Lamb, Capt Liston, Dr Martin and their able assistants, and now we are presented with a tangible and practical theory on which to work.

The following are, in the words of the Home Secretary to the Government of India, "the outstanding conclusions" on which measures must be taken, viz —

(1) "That bubonic plague is spread by infected rats,

(2) That the vehicle of contagion between rat and rat and between rat and man is the rat-flea, and

(3) That the life of the plague germ in soil, the floors and walls of houses and the like is of short duration."

Efforts, therefore, need no longer be directed to "troublesome and expensive measures" directed towards disinfection of soil and houses, but efforts must be concentrated on the prevention of the access to man of infected rats and their fleas and to counteract the effects of the bites of infected fleas.

Success in the future will depend upon the degree which it will be found possible to bring "the wishes and even the prejudices of the people" into line with these necessary steps.

In an article in this issue Lieutenant-Colonel Andrew Buchanan, I.M.S., pleads hard and well

for a trial of that natural enemy of the rat the cat, and from his experience in the Central Provinces it is clear that this is a "plague measure" acceptable to and understood of the people, and we ask therefore for a thorough trial of cats as plague preventers in addition to all other measures directed against rats and rat-fleas.

It must before all be remembered, however, that it is *not during the plague epidemic* that we can war successfully against rats, they must be exterminated *before* the advent of the disease, and the custom of deputing plague medical officers only during the epidemic season should give way to the employment of tactful and experienced officers throughout the whole year.

THERE REMAINS, HOWEVER, INOCULATION

"Inoculation" (as Sir Harold Stewart says, in the letter we have already quoted from) "*is established beyond doubt (as) a most valuable protective against plague*"

We do not suppose there is a single medical man with experience of inoculation who will not endorse this statement, and if there are any sceptics remaining we need only refer them to the recently published report by Lieutenant-Colonel Bannerman, I.M.S., the Director of the Bombay Laboratory. In this report (for nine months ending 31st December 1906) will be found a mass of evidence proving, to our mind conclusively the enormous protective power of inoculation and its entire harmlessness. This is shown by the numerous experiences by medical men and others which are quoted in Lieutenant-Colonel Bannerman's report.*

The future of plague in India may be summed up in the statement that it depends entirely upon the degree with which the peoples of the affected provinces in India can be persuaded and helped to undertake for themselves the destruction of rats and rat-fleas and the rendering of their habitations unfit abodes for such vermin, and, moreover, the degree with which they can be taught to protect themselves, in the meantime and during the long months of danger, by inoculation, which affords a very high degree of immunity and doubles the chances of recovery even if attacked.

* Since the above was written we have read with great interest the powerful memorandum on the great value of inoculation as proved in the United Provinces. The Government of the United Provinces is to be congratulated on the scheme they have formulated for the control of plague. We hope soon to see the other provinces (such as have not yet begun) follow suit.

ANOTHER SPECIAL PLAGUE NUMBER

At the request of several medical officers who have worked much at plague prevention in India, and who have greatly appreciated the valuable amount of information collected in our special Plague number, July 1906, we have decided to issue another special number, and, in order to be able to get the experiences of medical men on plague duty during the coming epidemic season, we propose to bring out the special number in June or July 1908, and would ask all contributors to let us know beforehand of their intention to contribute and also to note that all such papers should be in the hands of the Editor not later than 1st May 1908

In our previous special plague number the subject was *How Plague is Spread*. Since then the researches of the Plague Committee have very largely answered that question, we propose therefore that the new special number shall be devoted to the discussion of certain gaps or lacunæ in our knowledge of the epidemiology of plague, and therefore propose the following — (We shall be glad to consider other questions which men with experience of plague may suggest.) Meantime we would wish the papers contributed to confine themselves chiefly to a discussion of the following questions, giving authority for all statements and personal experiences where possible —

PLAGUE PREVENTION

(1) It is now generally accepted that rats are the cause of Plague epidemics. Is there any evidence that plague epidemics ever occur without rats having died? (An epidemic of pneumonic plague has been reported without rats having died. Possibly it was epidemic pneumonia.)

(2) Is it the rule in the smaller towns and villages that prior to an epidemic there are swarms of rats, and that after an epidemic rats are very few in the parts of the towns which have suffered?

(3) Is it the rule that if an epidemic begins late in the plague season (April or May) it will be likely to recur at the beginning of the following plague season (that is in August or September)? (Incomplete epidemic of Browning Smith.)

(4) Can you tell whether an epidemic is likely to occur by making an estimate of the number of rats?

(5) In the villages and smaller towns is it the rule that a year of severe plague is followed by two years of comparative freedom from plague? How far would this fit in with the view that it takes about three years for the rats to breed so that they are again in large numbers?

RAT DESTRUCTION RELIGIOUS ASPECT

(6) Are there many objections to rat destruction from a religious point of view among Jains, Marwaris or other Hindus? Do some Jains and Marwaris catch rats and let them go in the fields near the houses? Has the opposition on such grounds been sufficient to interfere with the success of a rat extermination campaign?

(7) What is the best way of carrying on a rat destruction campaign? What is the best kind of trap and what is the best kind of poison? What is the best way to obviate the objections of the people?

(7a) Is there any evidence of a breeding season (1) for rats, (2) for rat fleas, and does it correspond with the plague season?

Please give any instances in your experience of the connection between rat fleas and plague attacks

CATS AS PLAGUE PREVENTERS

(8) Is the number of cats sufficient in villages or towns to justify the hope that they will be able to check the rapid increase of rats?

If there are any villages where the cats are 50 per cent or above, has plague been less prevalent than in the surrounding villages?

Is there any evidence that people have of their own accord taken to the keeping of cats with a view to check the number of rats?

Is the Indian cat a good rat catcher as a rule?

Do the people believe that cats will keep away or destroy rats?

Are cats more prevalent in houses in which the occupants keep milch buffaloes?

KEEPING OF CATS RELIGIOUS ASPECT

(9) What are the traditions of the people regarding the keeping of cats? Do most Mahomedans know that the keeping of cats was approved of by the Prophet Mahomed and are they therefore most willing to keep cats? Is it considered a sin for Hindus to kill a cat? Are most Hindus willing to keep cats? Do a few Jains and any other sects object to keeping cats and on what ground? Are these classes numerous?

INOCULATION

(10) The objection to most of the statistics that have been brought forward to show the value of inoculation is that people who take the trouble to be inoculated are not likely to remain in houses in which rats have died from plague. Can you produce evidence to show that people who were inoculated and who remain in houses in which rats had recently died from plague, were more immune than others?

(11) Can you explain why it is that the people, although they have readily accepted vaccination, have not very readily submitted to inoculation on a large scale?

Admitting as all do the value of inoculation, would you advise the preaching and practice of inoculation in rural areas, and in towns, etc?

Current Topics

RECENT LOSSES IN THE I M S

THE Indian Medical Service has suffered several severe losses during the current year. Moir, Fullarton and Whitchurch were three officers who attained to distinction in their respective lines, and who were admirable types of the Indian Medical Service at its best, and men we can ill afford to lose.

Major Harry Frederick Whitchurch entered the Indian Medical Service on 31st March 1888 after receiving his medical education at St Bartholomew's Hospital, he took the second place in his batch, the first having been taken by D M Mon, who predeceased him by only a few weeks. It is well known that Whitchurch won the Victoria Cross for his gallantry in carrying in under fire a wounded brother officer during the siege of Chitral in 1895, under circumstances related in full by a brother officer, Sir G Robertson (I M S, ret'd), M P, in his book entitled *Chitral, the Story of a Minor Siege*. Major Whitchurch was also presented with the gold Medal of the British Medical Association on his going to England on furlough after the relief of Chitral. He elected to remain in military employ, and saw plenty of active service. In 1890 he served with the Lushai Field Force in the relief of Changsil and Fort Aijal and received the medal and clasp. In 1895 he served through the siege of Chitral, was mentioned in despatches (G G O, 531 of 1895), and received the V C and the medal and clasp. In the Frontier troubles of 1897-98 he served in the force which defended the Malakand, he also took part in the relief of Chakdara, the action at Landakoi and the military operations in Bajour and the Mohmand Country and was mentioned in despatches again and received two clasps. In 1900 he went to China and served in the relief of Pekin, and the actions of Pritsang and Yangtson, here also he was mentioned in despatches and received the China medal and clasp.

Major Whitchurch has for several years past been Medical Officer of the 1-1st Gurkhas, and only recently was appointed one of the staff medical officers for mobilization under the recent army re-organization scheme. Major Whitchurch was born in September 1866, and consequently had not completed his 41st year, he having entered the service at a very early age.

The above remarks had not gone to press when we received the very sad news of the death of Lieutenant-Colonel H J Dyson, I M S, at the General Hospital, Calcutta, on September 1st. Lieutenant-Colonel Dyson was born in 1860, and entered the service on 1st April 1885, having taken the F R C S (Eng) the same year, he saw active service in Burma in 1886-88 with the 1st and 4th Brigades, and received the medal

and clasp. Soon after he entered civil employ, and made a great reputation for himself in the Punjab Sanitary Department. He was then transferred to Bengal to act as Sanitary Commissioner during the absence of Surgeon-Major W H Gregg, and soon after he succeeded to the appointment of Sanitary Commissioner, Bengal. He soon came in for the stress of the period of the beginning of the present plague pandemic. On the completion of his seven years of office he took two years' furlough to England, and on his return he went back to the ordinary line and became Civil Surgeon of Bhagalpur. Unfortunately his health soon broke down during a trying hot weather, but a change to Darjeeling set him up and he was able to go to Hazaribagh as Civil Surgeon and Superintendent of the Central Jail. He took up the work at Hazaribagh enthusiastically, and as gardening was his special hobby, he was able to effect many improvements in that large agricultural jail.

He had suffered for some years from a relapsing form of dysentery, which ended in a condition of spue. In August he had to give in and came to Calcutta to take leave, hoping that a long sea voyage to New Zealand would make him well, but *dis abiter visum*, and he died on the night of 1st September in the Presidency General Hospital. He only married less than a year ago.

PAY OF JUNIOR I M S OFFICERS IN THE JAIL DEPARTMENT

A RECENT order of the Secretary of State, dated 14th June 1907, (33 Judicial) to the Governor-General of India in Council has effected an important improvement in the rates of pay offered to junior officers in the Jail Department. By this order the rate of pay is fixed at grade pay of rank *plus* Rs 225 per month staff salary, and in case of officers officiating in charge of second class Central Jails Rs 175 per month. Fortunately there are but few second class Central Jails which are whole-time charges, most of them being in charge of Civil Surgeons as collateral charges, hence, practically speaking, we may consider only the case of I M S officers officiating in charge of first class Central Jails.

The order of the Secretary of State referred to runs as follows: "I give my sanction to the proposal that a minimum staff salary of Rs 225 and Rs 175 a month, respectively, should be granted to officers of the Indian Medical Service without a permanent regimental appointment who are appointed to officiate as first and second class Central Jail Superintendents."

We are of opinion that this concession should result in a good supply of candidates for the Jail Department, which in these days of decreasing private practice, is not without many

attractions for young officers, especially those who have married early. The pay of a Lieutenant would be calculated as follows—Grade pay Rs 350 + 225 (we consider the case of first class Central Jails only), Rs 575, but as but few Lieutenants are appointed to Civil Departments till well on in their third year of service, and as it is more likely that an officer would be a Captain when joining the Jail Department, his pay would then be—

	Rs	Rs	Rs
After 3 years' total service	400 grade +	225 staff =	625
" 5 " " "	450 " +	225 " =	675
" 7 " " "	500 " +	225 " =	725

but it is practically certain that an officer joining early would have got a permanent post before he had completed seven years' service. When to these rates of pay is conjoined a good and free house, (certainly worth not less than Rs 100 a month and in many places worth more) garden servants, and a life comparatively free from ruinous transfers (the bane of early military and early civil employ) we think that, as we have said, the Jail Department is well worth the attention of junior officers. They need not fear that they will not like the work, for, as a matter of fact, the free hand given, the powers and responsibility of the position almost always prove attractive, and for the man wishing to study the diseases of India there are few places where this can be better done than in the hospital of a big Central Jail, where alone cases can be kept under continuous observation.

THE DUST THEORY OF CEREBRO-SPINAL FEVER

ALL our readers who are interested in the etiology of this formidable disease which is well-known in India will probably remember the dust theory of convection which was first started in connection with the series of cases which occurred in the Central Jail at Bhagalpur several years ago*. The clear connection of cases with dusty occupations and the dusty months (April and May) was first pointed out by Major C R Stevens, M.D., F.R.C.S., now of the Cicutta Medical College and then officiating as Superintendent of the Central Jail, Bhagalpur. He found out the connection in the series of cases under his care in the hot weather of 1900, and the present editor examined the history of the cases of previous and succeeding outbreaks and in a paper in the *Journal of Hygiene* (Cambridge University Press, Vol I, No 2) showed that the dust theory largely explained all the cases which had occurred in that jail. Subsequently Major E A R Newman, I.M.S., showed that the same was true, as also did Captain J Woolley, I.M.S., more recently. Thus the experience of a succession of medical officers in charge of that jail satisfied themselves of the truth of this theory†

It is, therefore, with some satisfaction that we note in a recent issue of the *British Medical Journal* (July 27th, 1907) that Dr W Robertson, the medical officer of health, Leith, has come to the same conclusion, and in a valuable article gives many arguments for the "spread of the infection by the blowing about of dust". This is all the more valuable as Dr Robertson is apparently ignorant of the work done on this disease in India—an ignorance shared by most English and German writers on the recent epidemic in Europe. Even the best text-books and systems of medicine know little or nothing of the prevalence of this disease outside of Germany, America and recently the British Isles. It has, however, been clearly differentiated and recognized in India since at least 1883, and its occurrence in Egypt should be known to all since its discovery at Khartoum after the battle of Omdurman.

A CASE OF INTENTIONAL LIVE BURIAL

By the courtesy of Colonel Pat A. Wen, I.M.S., Inspector General of Civil Hospitals, C.P., we have been enabled to see the judgment in an extraordinary case of burial alive which recently happened in the Betul District, C.P.

The judgment of the Sessions Judge, Nerbudda District, gives all the facts, and we here briefly abstract it.

The case was *King-Emperor v Dama Garki*, for the murder of his wife, Indio, 302, I.P.C. It appears that the wife Indio had been for a long time suffering from chronic dysentery, and on 29th January 1907, the woman's husband, Dama, the accused, took her and the family away to another village, he appears to have abandoned his sick wife at this new village and returned to his own with his children, and stated that he had left his wife with a *bhagat* or exorcist for treatment. The village authorities sent the poor woman to another village where the husband was sent for, and his wife made over to him and a cart and bullocks lent him to take her to his home. The accused took the cart, but came back the same day saying that the wife had died on the way and he had buried her. He was ordered to go and report the death to the *Kotwar*, he made no such report, but returned to his own village, and there stated that his wife was alive and under treatment of the *bhagat*. On the sixth day after the alleged death of the woman a villager saw something move in the jungle and his cattle shied when they went near the place. The next day this villager told the *Kotwar* of this strange incident and they went and found the mysterious grave, with the leg of a woman clearly visible. They then heard the buried woman say "I am not dead" and she then told the *Kotwar* that her husband had buried her. The woman's brother-in-law and daughter were sent for, and they lifted the buried woman out of the rough

* See I.M.G. Vol for 1901, January, June and July, Nos. also September 1902, May, 1906, March 1907 April, 1907.
† See also Report on Cerebro-spinal Fever by Major Robertson Milne, I.M.S., published by the Government of India.

grave and gave her food. She was sent to the Badnui hospital and lived on for some 12 days longer. The extraordinary part of the story, apart from the callousness and superstition of the husband, is the fact that the poor woman must have lain in the shallow grave, covered with leaves and branches, for six or seven days without food or water. The accused was sentenced to transportation for life.

PLAGUE FLEAS AND OTHERS

THE second issue of the Report of the Plague Committee chiefly consists of ten valuable reports of the work done in the Bombay Laboratory by Major Lamb, and Captain W. Glen Liston, I.M.S., and their able assistants. It is somewhat disappointing to have this valuable report issued in piecemeal fashion as extra numbers of the *Journal of Hygiene* instead of being published as a whole by the Government of India, who now we presume will have to purchase copies of their own Report for circulation to medical men in India.

We cannot here refer to the many valuable observations and experiments in this series, but we give the following account of the different fleas which are more or less of interest to men working at plague prevention. The following fleas may be distinguished—

- 1 *Pulex irritans*, or the human-flea
 - 2 *Ceratophyllus fasciatus* or the common rat-flea of Europe
 - 3 *Pulex felis*, the cat and dog-flea
 - 4 *Ctenopsylla Musculi*, commonly found on rats and mice in various parts of the world
 - 5 *Sarcopsylla gallinacea*, a flea commonly found on birds.
 - 6 *P. Cheopis*, the plague rat-flea of India.
- The differentiation of the two fleas, *P. Cheopis* and *P. Irritans* is as follows—

P. Cheopis is small and light coloured compared with *P. Irritans* and has more bristles on its head, and "the ocular bristle in *P. Cheopis* is situated nearly on a level with the upper border of the eye whereas in *P. Irritans* it arises nearer to the lower margin of the eye."

Moreover, the antipygidial bristles in *P. Cheopis* are larger than those of *P. Irritans*. In the males the shape of the clasper at once distinguishes the fleas from one another, and the shape and size of the claws are different. In *P. Cheopis*, they are small and large in *P. Irritans*. Other experiments show that *P. Cheopis* will readily bite man, and when very numerous, it will bite man even in the presence of its natural host the rat.

DURATION OF PREGNANCY IN EUROPEANS AND NATIVES OF INDIA

IN the *Journal of Obstetrics of the British Empire*, (June 1907, p. 465) there appeared an interesting article by Capt J. C. Holdich Leicester, M.D., M.R.C.P., F.R.C.S., etc., on the question of the duration of pregnancy in Europeans in the

Tropics, in East Indians and in Natives of India, a subject which has hitherto not been investigated. Capt Leicester gives the following results based on the records of some 400 cases at the Eden Hospital for Women, Calcutta.

The duration in all cases has been reckoned from the last day of the last menstrual period. In Europeans it was found in 87 cases, the average duration was 279.97 days. In East Indians (meaning thereby all degrees of admixture between Europeans and Natives of India) in 169 cases, 276.74 days, in Natives 279.97 days in 143 cases, therefore between the European and the Native of India the difference in duration was infinitesimal, but there is a difference of over three days between them and the Eurasians. The following table showing the relation of the weight of children born to the various periods of gestation is worth republishing—

	Period of Gestation in Days			
	269 & less	270—279	280—289	290 & over
EUROPEANS				
Average weight	6.08	7.1	7.699	8.36
Maximum weight	9.03	9	9.875	10.56
Minimum weight	5.75	5.56	5.7	6.25
No. of Cases	14	24	37	12
EAST INDIANS				
Average weight	6.6	6.92	7.31	7.51
Maximum weight	7.75	11	10	9.12
Minimum weight	4.61	4.5	5	5.12
No. of Cases	35	70	46	13
NATIVES				
Average weight	5.86	6.03	5.81	5.7
Maximum weight	7.41	7.81	8.27	7
Minimum weight	4.62	4.34	4.2	4.09
No. of Cases	18	47	56	21

"BENGAL PAST AND PRESENT"

Bengal Past and Present is the name of the journal published by the newly established Historical Society of Calcutta, the first number of which was published in July 1907. It is a beautifully got up quarto volume, with numerous full-page illustrations. The Revd. W. K. Firminger is the Editor. The object of the Society is the study of the history of Bengal, from the time when Charnock founded Calcutta.

Among the many interesting contents are articles on the Sans Souci theatre, on old Fort William, (by the late C. R. Wilson, reprinted from the *Indian Church Review*), on the Governor-General of a day, (General Clavering), on Dalhousie Square in the eighteenth century, and last, but not least, general notes under the headings of "Leaves from the Editor's Note book," and "Members' Notes."

At the end of the journal is a list of members of the Society, up to date 137 in number. The Calcutta mercantile community, as might be expected, furnishes the largest number of members, the Civil Service is also well represented, only two members of the I.M.S. are included.

The subscription to the Society is Rs 20 per year, including the journal. The price of the latter alone is Rs 2/8 per copy. We wish both Society and Journal every success.

It is just 200 years ago since the first hospital was built in Calcutta as we learn from the article by the late Dr C R Wilson, republished in the first issue of *Bengal Past and Present* (July 1907) above mentioned. He wrote "In 1707 the authorities at last were induced to attend to the needs of the soldiers and sailors who every year fell sick and died in large numbers [between Aug 1690 and Jan 1691, no less than 450 deaths occurred in European population of 1250*] owing to the cruel manner in which they were neglected. After frequent representations had been made by the doctors, the Council agree on 16th October 1707, that a convenient spot, close to the burial ground, should be pitched on as the site of hospital, and contributed two thousand rupees [!] towards building expenses. The rest of the money was raised by public subscription." We published three papers on these first Calcutta hospitals in our January No 1903.

We have already (*I M G*, August) referred to Dr W C Hossack's useful little pamphlet on rats and plague. His larger monograph, which forms the first *Memor of the Indian Museum* (Vol I, No 1, July 1907) has just been issued. We need not give a detailed account of this valuable monograph as we understand it will be circulated widely among medical officers in India. We find a description of a new variety of *Nesokia* sent by Capt G King, RMS, from Jagdispur in Shahabad District, and we note that Dr Hossack concludes that there is no distinction between *Mus rufescens* and *Mus Alexandrinus* in India, and that both are identical with *Mus rattus* of England.

In the second number of the new *Annals of Tropical Medicine and Parasitology* (Liverpool), Drs E. H. Ross and H. C. Ross, of the Public Health Service of Egypt, give an account of an apparatus they have designed to give a constant supply of oil on the surface of the water in cess-pools, which could be easily handled by a native and cheaply made in any country. It is made from an old kerosine tin. Other articles in the same issue deal with the anatomy of biting flies, and typanosomiasis, but are not of sufficiently general interest to warrant reproduction here.

THE *Records of the Indian Museum* of which the first part is published, promises to be

* One line of Kipling's (Depart Ditties) was true enough of Calcutta of 1707—"and above the packed and pestilential town Death took its dorn."

Otherwise Kipling took the usual upcountry man's view of Calcutta and its climate.

a valuable Journal of Indian Zoology. We find an interesting note by Dr G C Chatterjee of the Medical College, Calcutta, on finding of numerous *Anopheles* larvae in the salt and brackish tanks at Port Canning below Calcutta. All the larvae examined proved to be of *A. Rossii*. In the rest-house there Chatterjee collected in three hours 250 specimens, the most abundant being *A. Nigerimus*, *A. Balbinostrus*, *A. Jamesi* and a species described which may be new.

DR R P STRONG, of the Manila Laboratory, has published an elaborate study on plague immunity, which is published in monograph form, being No 3, Vol II of the *Philippine Journal of Science* (June 1907). It is a very valuable study, he recommends the gradual immunization of a community by means of anti-plague vaccination, especially in endemic centres. It is too long to attempt to summarise here, but the monograph is recommended to all interested in plague epidemiology.

AN outbreak of beriberi is reported among the tea garden labourers on several estates near Kuiseong and Darjeeling. Many of the cases have proved fatal. The outbreak is being investigated.

We have received two very useful pamphlets on plague prevention, one by Babu Moni Mohan Bos, Vice-Chairman of the Lucknow Municipal Board. This is an excellent pamphlet, full of sound advice. If India had many more Vice-Chairmen of the knowledge and wisdom of Babu Moni Mohan Bos, plague would soon cease to be the dread thing it is. The other pamphlet is issued by the Punjab Medical Department and is designed to give advice to all persons in any way assisting in anti-plague campaigns. It is well and clearly written, all important matters are emphasized, and we would like to see it scattered broadcast in all the vernaculars of India and Burma. If we are to carry the people with us in our endeavours to put down plague, we must attempt to educate them. This pamphlet is well worth the attention of the Medical Departments of other Provinces.

Reviews.

Pathology, General and Special, for Students of Medicine.—By R. TANNER HEWLETT, M.D., M.R.C.P., D.P.H., pp 540, 28 plates and 13 figures.

THIS manual is intended to detail such essentials of general and special pathology as seem to the author to be required by the majority of medical students. This aim has been successfully fulfilled in a book which is well written, complete, up to date, and beautifully illustrated by microphotographs from which the plates are

taken It opens with a chapter introductory in character, dealing chiefly with the causes of disease, followed by one on progressive and retrogressive changes. The third is on neoplasms, and ends with a well-weighed section on their etiology, showing the present position of knowledge and opinion on this matter.

Inflammation is excellently dealt with, largely by quotation from Cohnheim's work. The next subject treated is immunity. The different contributing factors are taken into consideration, and their relative importance indicated in a masterly manner. To "Koch's postulates" he adds two more, the first being that "chemical products with a similar physiological action should be obtained from the tissues of man or animals dead of the disease," and the second that "a specific serum, agglutinative or bacteriolytic, or both, is generally obtainable, under certain conditions, with the blood of the infected person or animal, when mixed with a culture of the specific organism producing the infection."

In the consideration of the principal infective diseases, the author concludes respecting tuberculosis that "there is no essential difference between the human and bovine bacilli, though Koch stated the contrary." Among the protozoan parasites, the growth of the Leishman-Donovan body of tropical splenomegaly into a typanosome-like organism is mentioned, but without Rogers's name being attached to the discovery. The plates attached to the descriptions of metazoan parasites are particularly good, especially that of *Trichina spiralis* in muscle. In the chapter on fever the significance of the work of Mott and Halliburton in demonstrating the presence of a neuro-globulin coagulating at a temperature of 42°C (107.6°F), provided that this is maintained for from 3 to 4 hours, and the bearing of this on the mode of death from hyperpyrexia, is explained. The beneficial effects of moderate pyrexia in infective diseases are affirmed, both from clinical and experimental data. Under the heading of metabolism, the significance of Chittenden's work suggesting that about half of the amount of nitrogen hitherto supposed to be necessary for the maintenance of nitrogenous equilibrium, is really requisite for that purpose, is shown, and so is that of the recent work tending to prove that the intestinal enzyme *trypsin* decomposes peptone into amido-acids, etc., and that it is likely that proteid and protoplasm are built up in the body from comparatively simple products probably in the intestinal epithelium. The probable causation of gout by faulty metabolism in connection with endogenous purins is stated.

Diseases and pathological variation of the blood are next fully considered, and the author then passes on to the pathology of special organs. Of these, there is no need to make detailed mention, though this part of the book is as good as is that on general pathology.

Disease of the pancreas, kidneys and nervous system are those on which greatest stress is laid. To the modern conception of albuminuria as depending, both quantitatively and qualitatively, upon a porous condition of the endothelium of Bowman's capsule and of the glomerular capillaries prominence is given, and Bright's disease is not looked upon simply as a disease of the kidneys, but as one of vessels generally. The pathology of "white leg" is not entered into, one of the very few omissions in the book, that of chorion epithelioma is full. The chapter on nervous diseases is preceded by a section on the neurone systems and on cerebro-spinal fluid. It is full, clear, and has some beautiful illustrations. Acute cerebral poliomyelitis, the cerebral analogue of spinal acute anterior poliomyelitis is not mentioned. The last chapter deals with common and rare diseases of the locomotive system. For clearness and completeness it is one of the best books of its size on the subject.

Text-Book of Psychiatry.—By Dr E MENDEL, Professor in the University of Berlin. Authorized translation, edited and enlarged by WILLIAM C KRAUSS, M.D. Published by F A Davis Company, Philadelphia.

THE translator defines the book as "A Psychological Study in Insanity," and this forms a useful summary of its scope and aim, typical as it is of the attitude of science at the present time, whatever may be the change which may, and we believe must, pass over the scientific attitude in the future. We must join issue on the statement that altruistic ideas are the product of education. On the contrary, however much they have been accentuated by this factor, they are in essential deeply built into the mental fabric and have formed a necessary factor in the evolution of man, being at least foreshadowed far down the animal scale, as for example, in the fight to the death which the wild mother will make for her offspring.

The body of the book consists of two parts, the first on general, the second on special psychiatry.

In the former, the chief part is occupied by general symptomatology, considered under ten heads, thereafter follow the etiology and course, treatment of mental disease.

In the second part, on special psychiatry, mental diseases are classified and divided into idiopathic, functional psychoses, psychoses arising out of central neuroses, psychoses of intoxication, and organic psychoses. Of the functional psychoses, the primary forms recognized are delirium, hallucination, mania, melancholia, circular psychoses, paranoia, and acute dementia. Among the psychoses arising out of central neuroses the principal is, of course, general paralysis, and it is surprising to find that the megalomania which is so universally

described as one of its essential early features is not even referred to. The weakness of will power induced by indulgence in morphia and other drugs, and which constitutes so grave a difficulty in producing a complete cure of the morphomaniac, is not given a place in the consideration of the disease, possibly because the author has no great opinion of the will which he defines as "an idea born from an idea, and generating ideas of special accentuation."

The style is abrupt and often difficult to follow, and consequently the book is not likely to be very useful to the student in this country, although, as the work of an authority on this subject, it will be welcomed by the psychiatrist here in India as much as elsewhere.

The Puerperium—By C. NEPEAN LONGRIDGE, M.D., CH.B. (VICT), F.R.C.S., M.R.C.P., Pathologist and Registrar, Queen Charlotte's Hospital, London. Adlard & Son, 1906. Pp. vii + 272. Price 2s. 6d. net.

THIS work has been written chiefly for the help of the young general practitioner with regard to numerous details of the management of the lying-in woman and new-born infant. The first part deals with the accidents, injuries, diseases, etc., of the puerperal woman, abounds in useful and instructive hints on many points, and is of an essentially practical nature. There are one or two small matters, however, which in our opinion call for some criticism, chief among which are the absence of any mention of compression of the abdominal aorta in the treatment of post-partum hæmorrhage—a most reliable method of treatment. Again, in the paragraph dealing with the introduction of the hand into the uterus, no mention is made of the use of rubber gloves by the operator, a useful and wise precaution. The use of catgut for the purpose of rectal suture in complete tears of the perineum we consider a doubtful question. We also think it is a debatable point as to whether the use of forceps tends to produce tears of the perineum. The author is in favour of giving a vaginal douche after delivery, as a routine practice, and there is certainly something to be said for it, more especially in India, where cases are so often interfered with by imperfectly trained persons before coming under the care of a qualified practitioner.

The second part of the work which treats of the care and management of the new-born infant is, in our opinion, not quite so good as the first part, though there is much useful information to be found in it. One statement which we think calls for criticism is, that in the preventative treatment of ophthalmia the results obtained from the use of a solution of 1 in 1000 perchloride of mercury are as satisfactory as those given by the installation of a few drops of 2 per cent solution of silver nitrate. This certainly is not in accordance with the usual teaching on the subject.

The book as a whole can be cordially recommended to students and practitioners as a useful guide on the subjects of which it treats, and a careful perusal cannot fail to give much practical information on many points which are not treated of in the standard text-books, but which constantly arise in practice. The printing is especially clear and distinct, and the fact that a matte paper of light weight is used, makes the reading pleasant and less tiring than is the case with a highly glazed surface.

Conservative Gynecology and Electro-Therapeutics By G. BETTON MASSEY, M.D., Attending Surgeon to the American Gynecologic Hospital, Philadelphia. Fifth Revised Edition. Pp. xv + 467. With 150 Illustrations and 24 Plates. Philadelphia: F. A. Davis & Co., 1906. Price, not stated.

THIS work is practically entirely devoted to the treatment of gynecological diseases by means of electricity. We think that the claims made by the author for this method of treatment are greatly and unwisely exaggerated, and whatever may be the case in America (though we personally decline to accept the author's assumptions) it certainly cannot be said in England that these cases are "notoriously maltreated at present by methods almost invariably involving the sacrifice of organs," or that "women by the score, without previous attempt to cure, are persuaded to undergo operations dangerous to life and unwarranted by sound judgment, and which are followed by life-long consequences in them that are either carefully concealed, or else carelessly withheld from their knowledge before their consent is given." As examples of treatment, recommended by the author, may be taken the intra-uterine application of electricity on successive occasions for the cure of dysmenorrhœa. This is certainly a method of treatment which will not commend itself to most gynecologists, at least in the case of unmarried women, and to talk of the more ordinary methods of treatment by forcible dilatation of the cervical canal for this condition as "harsh methods of treatment" and "mutilating and cicatrizing of the uterine mouth" and as "illogical procedures which should be relegated to the obscurity of an historic fad," etc., is as absurd as it is unjustifiable. In the chapter dealing with the treatment of fibroid tumours of the uterus, the author makes the amazing statement that "the life of the patient is never threatened but by some form of degeneration, and it has only recently been appreciated by the profession that the deaths after efforts at removal by the knife represent almost the entire mortality of these growths." We should at once say that this statement is in direct contradiction to all the best modern teaching both in England and America, and is quite contrary to the practical experience of those best in a position to judge. The more general opinion being that Apostoli's method of treatment is not only useless in the majority of cases, but is also by no

means free from risks To talk of the mortality after hysterectomy performed for this condition, as being 25 per cent in the most skilled hands argues an ignorance of most of the recent work which has been published on this subject The actual mortality in skilled hands is well under 5 per cent, and several surgeons have published a series of cases showing a mortality of even less than 3 per cent Again, the treatment of certain cases of ectopic pregnancy by the use of electric currents in order to try to kill the foetus and to cause its absorption as is recommended in this work has been practically given up after extensive trials because of its uncertainty and the grave risks run by its employment So much is this the case that the majority of modern works on the subject do not even mention its use As to the question of procuring abortion, when this may be considered necessary for any medical reason, we can hardly imagine the ordinary surgeon attempting to do so by means of the intra-uterine application of an electric current for 5 minutes or so, every other day for a week, as recommended in the section dealing with the treatment of this subject We think we have said enough to show that the book cannot be taken as at all a reflection of modern scientific gynecology either in England or America, nor can it be recommended to the general practitioner as likely to be of much help to him in his practice

We are far from denying that electricity has a place in gynecology, for in certain well-defined conditions, it is a valuable aid to other methods of treatment, but we do not think its use will be aided or extended by making unmerited or exaggerated claims for it, coupled with abuse and censure of other well tried and scientific methods of treatment The book is fully illustrated, and for those interested in this subject it gives very full and comprehensive directions both as to the theory and also the practical application of electricity in this domain of surgery

The Nursling—By the late PIERRE BUDIN, M.D., Professor of Obstetrics, University of Paris Authorised translation by WILLIAM J. MALONEY, M.B., Ch.B., Edin With an Introduction by Sir ALEXANDER R. SIMPSON, M.D., Edin With 111 Diagrams in colour and other Illustrations London The Caxton Publishing Co., 1907 Pp 199 Price, 21s net

THERE are certainly few who are able to speak with so much authority derived from practical experience as the late author of this work, who was the founder of the famous "Consultations for Nurslings," to which mothers brought their infants for advice as to treatment, feeding, etc In this work will be found embodied many of the results derived from the tabulation of the weight, feeding, etc., of these children, in the form of numerous charts, and tables in which the work abounds The letterpress is composed

of a series of lectures on the care and feeding of the infant, the first four lectures dealing especially with debilitated and weak infants, and great stress is laid on the necessity of avoiding any form of chill in these cases The remaining lectures deal with the care of full-term infants, and include such subjects as the feeding of those who cannot be suckled (eg, those suffering from some congenital malformation, etc), the sterilization of milk, artificial feeding, etc The author very properly lays great stress on the absolute necessity of insisting on the mother suckling her off-spring whenever there is no insuperable difficulty to contend with He does not appear to have found that sterilized milk was in any way detrimental to the health of the infant, but on the contrary, in spite of what some authorities assert, they appear to have thriven on it

The book is very interesting and eminently readable, and the translator is to be congratulated on the skill with which he has performed his task We can confidently recommend it as a work which will be found to contain much sound and practical advice on the care and feeding of infants, and it is undoubtedly a very valuable contribution to the literature on this subject The publishers have performed their task well, as the paper, printing, etc., are of a high standard of excellence

The Past, Present and Future of the School for advanced Medical Studies of University College, London—By RICHMAN JOHN GODLEE, Holme Professor of Clinical Surgery, etc With 28 Illustrations London John Bale, Sons and Danielsson, Ltd Pp 46 Price, 2s 6d net

THIS small book is practically a history of University College Hospital from its first beginning It is written in an easy and pleasant style, and the illustrations are abundant and good It contains complete plans with a description of the new hospital, which at the present time is probably the most up-to-date and modern one in London, as well as a full account of the new school for advanced medical studies which is still in process of erection It should be read by all those who take an interest in medical education, as it includes a great deal of information on this subject, more especially as to medical education in London at the beginning of the last century, and it certainly should be in the possession of all old U.C.H. men as it teems with interest for all those who have had the privilege of being educated within the portals of this justly famed institution The binding, printing and general "get up" of the book are excellent

Surgery of the Rectum—By F. C. WALLIS, F.R.C.S. Pages vi and 168 Illustrations 55 Demy 8vo Price, 6s net Baillière, Tindal & Cox, 8, Henrietta Street, London

THE first few chapters of this book discuss ano-rectal ulceration, pruritus ani, fissure, etc

As regards priusitis and the cause in 90 per cent of the cases examined was found to be a shallow ulcer, situated usually, between the two sphincters, and the best results in treatment were obtained by cauterising this ulcer with an electric cautery after it had been anaesthetised with eucaine.

As regards hæmorrhoids, the only operations fully discussed are the ligature and Whitehead's, and the author strongly recommends the latter and states that it is the only radical method. The objections to it are fully dealt with, more particularly the one that stricture may follow, there is no risk of this if the after-treatment is properly carried out.

The most interesting chapter is the one on ulceration and stricture of the rectum, and here it is denied that this condition is directly due to syphilis. The author's views are that it is due to a septic ulceration, starting at or about the internal sphincter and which spreads by infective infiltration of the submucous tissue which precedes the actual ulceration, and it is this area of submucous infiltration which has to be dealt with to procure a radical cure, and the only radical cures which have stood the test of time are those in which the whole affected area of mucous membrane has been excised, and healthy mucosa stitched to the anus. Considering the intractability of these cases, one can fairly recommend this operation, but at a late stage it would be attended with very considerable difficulty and risk to the patient, and quoted cases of the author's show this.

The remainder of the book discusses growths of the rectum and their treatment.

The book is concise and very well illustrated.

ANNUAL HOSPITAL REPORTS

I PUNJAB

COLONEL BATE's note on the Punjab Hospitals for the year 1906 is extremely brief and it is difficult to do justice to the work of a department in three pages of print. The report, however, is one of progress, and the increased attendance both of in and out-patients shows the increasing hold the hospitals have got on the people. Colonel Bate also specially refers to the excellent (medical and surgical) work done by many Mission hospitals and dispensaries. The Mayo Hospital, Lahore, has got four new English trained nurses, and the Delhi and Amritsar hospitals will also soon be similarly supplied.

The widespread prevalence of malaria in the autumn of 1906 accounts for the increase of 276,000 in the total number of patients treated. The following note on the work done in operative surgery shows clearly the remarkable work done —

"The number of surgical operations performed during the year rose from 180,408 in 1905, to 192,613; the number of patients operated on increasing from 178,245 to 189,719. Selected operations number 19,421 including 460 amputations, 2,400 for stone in the bladder, 8,010 for extraction of the lens, 107 for hernia, 46 for abscess of the liver, 59 abdominal sections, 20 ovariotomies, and 9 caesarean sections.

"Among the officers who distinguished themselves in the field of surgery, Major H. Smith stands first, with 3,274 selected operations, next to him comes Lieutenant-Colonel F. I. Perry, with 596, followed by Lieutenant Colonel T. R. Mulronev, Lieutenant-Colonel H. Hendley and Major A. Coleman, who performed 492, 338 and 320, respectively. Major Smith did as many as 2,974 cataract extractions, which

is, so far as I am aware, a world record, this officer's reputation as an ophthalmic surgeon has extended throughout Northern India and people flock to him in large numbers from a very wide area. The steady growth from year to year in the number of operations done by Major Smith is unmistakable testimony to the excellence of his work. Very good work has also been done by several other officers, including Major A. J. Macnab and R. Herd, who successfully performed a large number of important operations in the Ripon and Waller Hospitals. Similarly Major A. W. T. Burt performed 168 operations for stone in the bladder which is the largest number done by any officer in the Punjab during last year.

"The following Assistant Surgeons performed the largest number of selected operations — Lala Khazan Khan (475), Rai Bahadur Thakur Das (358), Lala Gurdhara Lal (301), Lala Umrao Raja Lal and Lala Jugral Kishore (259 each), Lala Har Narayan (242), Mr. Diwan Ali (218), Mr. B. C. Ghose and Lala Hari Chand (213 each), and Lala Baij Nath (212).

"It gives me great pleasure to be again able to favourably mention Hospital Assistant Mathura Das, who did as many as 519 selected operations at Moga, in the Ferozepore district, the number including 317 cataract extractions, and 20 for stone in the bladder. I can here personal testimony to the excellence of the work done by this subordinate, who is not only skilful but energetic and zealous. The operative work of Hospital Assistant Sham Das, in charge of the Fettehgarh dispensary, in the Gurdaspur district, also deserved to be favourably noticed."

Turning to Statement G. We find record of 1,849 tumours removed, over 4,000 bone operations, numerous amputations, hairep only 44, rhinoplasty 49, ranula 31, trichiasis 3,299, entropion 508, strabismus only 2 (showing disinclination to operative treatment rather than rarity), fistula lacrymalis 182, pterygium 342, nictitomey 759, and for cataract no less than 8,010 (a world's record surely for any one province), excision of breast only 23, abdominal sections 60, not counting enterorrhaphy 1, gastrotomy 1, excision of appendix only 13, enterotomy 17, colotomy 1, hernia operations, for strangulation 48, for radical cure 59, abscess of liver 46 (of which 22 were cured), on kidney 3, fistula in ano 230, operations for piles ligature 202, excision 60, cauterisation 9 (showing apparently that ligature is the most popular operation, as is also the case in the United Provinces). We also note 21 operations for removal of enlarged prostates. The number of stone operations is as follows —

Suprapubic as many as 45 (31 cured), lateral perineal 166 (131 cured), median 6, all cured, vaginal cases 6, lithotomy 7, litholapaxy 2,151 cases, 2,065 cured, 64 died, operations for hydrocele one comparatively, few they were tapping 231 cases, tapping with injection 74, incision 5, excision of parietal sac only 13. The above is a fine record of Surgery, and our readers will agree that the following remarks by Col. Bate are well deserved —

"Admirable work has been done by the medical establishment, with comparatively few exceptions, all ranks have done well. Civil Surgeons have exhibited a keen interest in their duties, they show alertness in using the resources at their disposal and in promoting new measures of relief. The Assistant Surgeons have also acquitted themselves very well, the class includes some excellent men, who are qualified to take a high place in their profession. Our Hospital Assistants are a most useful body of public servants, they have to minister, often in trying circumstances, far removed from help and guidance, to the needs of the masses, and I think everything possible ought to be done to raise their standard of knowledge and professional status. And, as a first step in this direction, they might be afforded opportunities of attending post graduate classes, with great advantage."

II

UNITED PROVINCES

AN admirable map showing the situation and nature of the dispensaries and hospitals in the United Provinces prefaces the brief report by the Hon'ble Colonel R. D. Murray, I.M.S., on the working of the Medical Institutions of those Provinces. In 1906 there were 509 whereas in 1896 there were only 350, a record of steady progress. The considerable increase in the attendance of in and out-patients is very satisfactory. There were no less than 188,572 surgical operations done during the year, among which figure Major Birdwood's total of 730 (including 552 cataracts), Lieutenant Colonel J. J. Pratt's 666, of which 269 were for cataract and 339 for the radical cure of hydrocele, which readers of this *Gazette* do not need to be told are "not injections of iodine." Lieutenant-Colonel J. Anderson did 461 operations, Major Milne 428, Major Crawford 411, and Dr. Macleod 184. Miss MacLaren did 103 operations and Miss Cleophras 52, Assistant Surgeon C. M. De has 302 to his credit (291 for cataracts), and Assistant Surgeon M. A. Rahim did 288, of which 263 were

for cataract, many other operators did over two hundred operations in the year.

Colonel Murray record the following note of progress —

"Many large and important works were executed during the year. A special grant of almost Rs 50,000 was sanctioned in connection with the new hospital at Moradabad which is now complete. A sum of Rs 6,000 was given by the Maharajah of Bulrampuri for improvements to the grounds of the Bulrampuri Hospital Lucknow. The new hospital at Oran has been completed but not yet occupied. The large ward which had been lent to the Ishwari Hospital at Benares has been given back to the Prince of Wales Hospital and is being converted into six paying private suites of rooms at the cost of Government. A sum of Rs 25,000 was sanctioned for improvements to Dufferin Hospitals and Rs 17,000 for Sadar dispensaries. Many works which had long been pending for want of funds were taken up by the help of these two special grants. Rs 4,45,730.88 were expended during the year on Medical buildings other than Lunatic Asylum and Chemical Examiner's buildings."

Statement G is always of interest, in it we learn that the following operations were done—tumours removed, 1,540, abscess over 55,000, bone operations over 3,000, operation on joints over 1,200, numerous amputations of all kinds, the pharynx 17, mastoid cells 13, rhinoplasty 22, aneurysm 73, cleft palate only 2, showing its rarity, harelip only 42, trichiasis no less than 1,233, entropion 539, strabismus only 5 (as it is rare or are patients unwilling to have their children operated on for this), cataract 6,486, of which 5,080 were cured, 151 relieved, 413 otherwise, 2 died, and 455 were remaining in hospital, excision of the breast only 49, hernia 178, kidney operation 3, gall bladder 2, abscess of the liver 55 (26 cured, 18 died), operation for fistula in ano 251, for piles 2 by injection, 86 by ligature, 54 by incision, 1 by crushing and 15 by cautery, operation for stone suprapubic 45 (35 cured, 6 died), lateral perineal 347 cases (301 cured, 24 died), median perineal 50 cases (45 cured, none died), vaginal lithotomy 5 cases, by litholapaxy 567 cases, 530 cured, 24 deaths, 6 remaining. Hydrocele is very common, there were 7,037 cases merely tapped, 225 tapped with injection, 1,619 incised, and in 166 cases the parietal part of the sac was incised.

On the whole this will be admitted to be a fine record of surgery for the province.

III

BURMA HOSPITALS

THERE were 213 hospitals open at end of 1906, and many new plans and estimates were in hand. Colonel King gives the following description of many of the up country hospitals —

"During my tours, line plans for improvement of existing hospitals were prepared for Akyab, Kyaukpheya Myingun, Pakokku, Minbu, Thayetmyo, Thabeikkyin Sinbo, Henzada, Kilewa, Monywa, Myitkyn, Mungun, Prome, Yamethin and Kyaukse. The necessity for action has been chiefly due to original faults of construction in hospitals at a time of development of the country when hasty erection was possibly requisite in the first place, for Police or Military purposes, the subsequent transfer for use by the civil population being the result of withdrawal or reduction of the Military element. Thus, structures are largely of wood throughout, with little regard, in the older buildings, to refinements in jointing. Practically all have then frame work in the interiors, so that there is great area for lodgment of dust. There has been little thought of separation of the sexes in the out-patients' department or privacy in examination. The in-patient accommodation for females is always inferior. Such sanitary points as position and structure of ward latrines, ward kitchens, linen rooms and the like have been little considered. It is, however, in respect to operation rooms that the most urgent action is necessary. To arrange for the lighting of an operation room to the east or south was in the past apparently a matter of convenience, whilst one much adopted standard plan shows direct communication with a general ward and its bath room with the operation room. The superficial area per patient is usually very poor, and almost universally the windows are badly placed and of very small area."

Funds were given by Government to remove the antiquated surgical equipment of many hospitals. The attendance of patients were over a million. The Civil Surgeon, Rangoon has reported on the "extremely unsatisfactory character of the accommodation for out-patients" in the Rangoon General Hospital, and in this opinion Colonel King concurs. The plague service has had its effect in keeping down the number of patients attending. No less than 1,900 cases of small pox were treated in the Contagious Diseases Hospital, and great credit is due to Captain Rost, and Major Penny, I.M.S., for their organisation of this hospital.

It is satisfactory to note an increase in operative surgery, and we quote in extenso Colonel King's remarks on this point — "Of these the large number of 3,053 were performed by the staff of the General Hospital, Rangoon. Operations on the eye, which I think particularly require encouragement in this Province (there being neither a specialist nor a special ophthalmic hospital) have undergone a moderate increase but the output is still far below what I hope may yet be found possible. Of important operations may be mentioned 14 excisions of the vermiform appendix, against two in the previous year, and 36 for radical cure of hernia against 24. Operations were also successfully undertaken in connection with the gall bladder and kidney. There was an increase compared with the previous year of removal of vesical calculus by various recognized methods. Midwifery operations also showed a satisfactory increase, but as in the Province at the present moment, there is no lying in hospital under official administration, there is evidently much room for future work in this direction. On the whole, the quantity of operations is improving and the quality, as shown by the attached detailed list, proves that the Province possesses self-reliant and skilful surgeons, who, under the improved conditions of equipment contemplated by Government, will, in the near future, be more effectually at disposal for the public good. The following officers are worthy of particular mention in regard to operative work fulfilled—Lieutenant-Colonel Evans, Captain Rost, I.M.S., and Major Barry."

IV

EASTERN BENGAL AND ASSAM

THE history of the Hospitals of Eastern Bengal and Assam is a record of steady progress and increased attendance and remarkable increase of attendance is noted at Dacca, Mokokchang, Mymensingh and at Jalpaiguri. In the Naga hills the great prevalence of syphilis is noted and in two dispensaries special syphilis wards were opened. We regret to see that the floating dispensary in the Paildur District has not proved a success. This and the sending of medical officers to attend at *hills* and fairs seemed once to be lines on which progress might be fairly expected. The number of selected operations rose from 2,676 in year 1905 to 3,019 in the year under report—we quote from Colonel Wilkie's report as follows —

"Among the operations were included 926 removals of tumours, 447 removals of cysts, 10 operations on arteries, 22 for aneurysm, 276 for restraint of hemorrhage, 22 on nerves, 1,324 on bones, 278 amputations, 32 operations on the skull and brain, 61 uidectomies, 522 extractions of lens for cataract, 3 eviscerations of eye ball, 1 tracheotomy, 5 excisions of breast, 1 excision of the thyroid body, 34 laparotomies, 3 sutures of intestine, 2 gastroenterostomies, 2 enterectomies, 2 colotomies, 2 excisions of the vermiform appendix, 1 operation for intestinal anastomosis, 93 for hernia, 14 for penetrating wound of the abdomen, 33 for liver abscess, 4 on kidney, 6 cystotomies, 43 lithotomies, 6 lithotrities, 86 litholapaxies, 1 ovariectomy, and 294 obstetric operations of all sorts."

The number of selected operations increased considerably during the year under report, being 3,019 in 1906, against 2,676 in 1905.

The undermentioned officers performed the largest number of selected operations resulting in cure or otherwise, during the year —

Lieutenant Colonel R. Neil Campbell, Dacca (280), Captain H. A. Gidney, Dinajpur (93), Captain W. V. Coppinger, Mymensingh (80), Lieutenant Colonel J. G. Jordan, Chittagong (50), Major W. D. Hayward, Rajshahi (47), Major A. R. S. Anderson, Rajshahi (40), Lieutenant Colonel E. A. W. Hall, Chittagong (33), Captain H. Innes, Barisal (32), Dr. R. S. Ashe, Paildur (31).

Amongst the Assistant Surgeons, Gopal Chunder Chatterjee, Dacca did 68, Rajan Kanta Das Gupta, Chittagong, 57, Barada Sankar Bhattachajee, Mymensingh, 48, and Elahi Baksh, Kishoriganj, 40. Hospital Assistants Usha Ranjan Mazumdar, Comilla, Hari Charan Gupta, Dinajpur, Bishnu Chauran Banejee, Mouli Bazar, Kartic Chandra Dyal, Norkhali, and Prasanna Kumar Purkayastha, Hareganj, performed 72, 39, 37, 34, and 30 operations respectively. Midwife Sundari Saikruti Nowgong, and Female Hospital Assistant Mrs. Pramada Datta, Dibrugarh, did the highest number of obstetric operations in the province, viz. 14 and 11 respectively. Must Idnessar of Mymensingh performed the greatest number of surgical operations, selected and unselected."

THE KING INSTITUTE REPORT FOR 1906

THE work of this institute is growing every year and may be divided into (1) routine, or examinations of specimens sent

in by medical and sanitary officers on malaria, plague, water examinations and tissues and tumours, (2) owing the small staff research work has to be limited the good work done in protozoology is well known and is summarized as follows by Captain Christophers, I M S —

"Protozoological research has dealt mainly with questions connected with the part played by insects and other blood suckers in the transmission of disease. Captain Patton, I M S, who has been attached to the Institute during the past year, has been able to devote his time to the study of the Leishman Donovan body. His researches started from the fact that the parasite had been recorded by two previous observers, Major Donovan and myself in the leucocytes of the peripheral blood and the hypothesis then put forward that by this channel they reached the gut of some bloodsucking insect. They have showed in the first place that at certain times parasites are present in the peripheral blood in large numbers and finally that such parasites do, as a matter of fact, undergo development in the gut of the bug into the flagellate bodies described by Rogers, the almost certain presumption being that this insect acts as the transmitter of the disease. A study in relation to this is that undertaken by Captain Patton with regard to the distribution of the different species of bedbug.

My own researches have chiefly directed to the discovery of the means by which the extraordinary hereditary transmission of *piroplasma* through the tick takes place. The direct study of human disease necessitating time to obtain material at present presents difficulties and of other researches none appeared to have a wider importance and greater interest at the present time than the one undertaken. Its successful issue whilst finally disposing of the affinities of the Leishman Donovan body to the *piroplasmata* yields the next instance, after that of the development of material parasites in the mosquito, of a complete cycle of development of a pathogenic protozoon in the body of a blood sucking insect. This research has entailed certain preliminary investigations upon ticks and the *piroplasmata* and has in its course led to the discovery of a portion of the cycle of development of the *haemogegaine* of the dog in the tick.

A line of research which has more or less thrust itself upon both Captain Patton and myself is that upon the mammalian *haemogegaines* a subject to which we have contributed a large proportion of what is known to science. The interest attaching to the presence of these forms, which were previously supposed to be confined to the cold blooded vertebrates in mammals such as the dog, cat, rat, squirrel and others is obvious. It was also thought at one time that some such parasite in the human subject might be the cause of an important disease of the white blood corpuscles."

The report contains valuable reports on *Cyllin* as a disinfectant, on the extraneous organisms of vaccine, on the development of *piroplasma canis* in the tick, on *kala azar*, and on the *piroplasmata* of Madras, and on the ticks of Madras, on the leucocytozoon *canis* and on several *haemogegaines* and in a new species of *stegomyia* mosquito found in Madras.

The whole report is valuable

Current Literature

MEDICO LEGAL

The following cases from the report of the Chemical Examiner, Bengal, for the year 1906, which are extracted from the official report are worthy of republication. The report is submitted by Major J. A. Black, M A M B, I M S, the Chemical Examiner —

Notes on Poisoning Cases — Assistant Surgeon Rai Chuni Lal Bose Bahadur, who is responsible for the Medico Legal Department, contributes the following interesting notes on selected cases —

Arsenic poisoning (absence of the usual post-mortem signs) — A case of arsenic poisoning in which a quantity of undigested food in the stomach and solid faecal matter in the intestine were found was referred by the Assistant Surgeon of Bihar. The history of the case was that the deceased, a child of eight years, was given some molasses mixed with poison to eat, and died of its effects within six hours. The mucous membrane of the stomach was found congested, and the organ contained a quantity of undigested rice and vegetables. The intestines were healthy and contained semi solid healthy faecal matter. The Medical Officer forwarded the viscera

for examination and arsenic was detected in them. Eight fowls ate the vomited matter of the deceased, and all died. The viscera of the eight fowls and the vomited matter of the deceased were also sent for examination, and arsenic was detected in them.

Arsenic poisoning reported as cholera — A woman died of purging and vomiting in the district of Jessore, and her husband and the neighbours reported the case as one of cholera. The police on certain information had a *post mortem* examination made on the body of the woman. There were two large and several small patches of ecchymosis in the mucous membrane of the stomach, and it was eroded at one place. The stomach contained a reddish brown mucoid fluid. All the internal organs were congested. The left heart was empty, but the right heart contained a small quantity of thick tarry blood. The viscera were sent for analysis and arsenic was detected in them.

Arsenic poisoning in quack medicine — A young Mahomedan was suffering from enlargement of the liver and spleen, and was given some medicine by another Mahomedan which caused his death. The body was exhumed on suspicion, and the viscera were sent for analysis by the Civil Hospital Assistant of Jhemda. Arsenic was detected in the viscera.

Arsenic poisoning (unusual symptoms) — The Medical Officer, Port Blair, referred a case in which a convict compounder had fever on the morning of the 24th July 1906. He was doing well throughout the day, his temperature being 99° F only in the evening. At about 8 P M, just after he went to bed after taking some milk, he was found to be groaning and having violent spasms, being quite unconscious. This condition lasted only a few minutes, after which he died. There was no history of vomiting or purging. At the *post mortem* examination both the liver and the spleen were found enlarged and deeply congested. The lungs, the kidneys, the brain substance and the membranes were also congested. The mucous membrane of the stomach was found inflamed, and showed large patches of punctiform hemorrhages. A quantity of curdled milk was found in the stomach. The mucous coat of the small intestine was also inflamed and showed punctiform hemorrhages. The large intestine was healthy and contained semi solid faeces. The viscera were sent for analysis, and arsenic was detected in them.

Arsenic packing cloth — In a case of *datura* poisoning some boiled rice suspected to contain poison was forwarded for analysis by the Civil Surgeon of Midnapore. When the parcel was received in this office, it was noticed that the outer cover which was yellow wax cloth had been soaked with fluid oozing from the contents of the parcel. On examination of the boiled rice, both atropine and traces of arsenic were detected in them. As yellow arsenic is sometimes used in the preparation of yellow wax cloth, suspicion fell on the yellow wax cloth cover of the parcel which had come into direct contact with the boiled rice, and on examination of the portions of the cloth free from soakage, the cloth was found to contain traces of arsenic. The Civil Surgeon was requested to forward a fresh specimen of the yellow wax cloth which had been used in packing this parcel. This was examined and found to contain arsenic. The ordinary white wax cloth, as supplied by the Stationery Department, was found free from arsenic on examination. The matter was duly reported to the Inspector General of Civil Hospitals, Bengal, who has issued orders prohibiting the use of yellow wax cloth for purposes of packing in medico legal cases.

Aconite poisoning — Four persons partook of a curry supposed to have been prepared from *ol* (corn of *Amorhophallus Campanulatus*), and severe vomiting and death ensued. The cultivated varieties of *ol* are largely used as edible vegetables in Bengal, the wild varieties produce irritation of the mouth and salivation owing to the presence of needle shaped crystals of oxalate of lime which mechanically irritate the mucous membrane. The *post-mortem* examination revealed

much congestion of the gastro intestinal tract in all these cases. The viscera of the four persons were sent for examination, and aconite was detected in three out of the four viscera. The vomited matter of the deceased as well as the suspected curry were also forwarded for examination, and aconite was detected in them.

Aconite poisoning—A person mistook aconite for liquorice root, and gave it as medicine to three persons with betels. All of them suffered from severe vomiting and a tingling sensation and numbness in the extremities, and they all remained in a collapsed condition for three days. There was no purging in any of the cases. They recovered. The vomited matter of all the three persons was forwarded for examination by the Civil Hospital Assistant of Jessore. Aconite was detected in the vomit of one person only.

Aconite poisoning (homicidal)—The Assistant Surgeon of Madaripur referred a case of aconite poisoning with the following history. A Mahomedan was given some food cooked by his wife. Soon after he felt very bad, vomited and was purged, and died in about two or three hours. The *post-mortem* examination revealed congestion of the mucous membrane of the stomach, which still contained much undigested food. The small intestine also presented a red appearance. The lungs and the liver were intensely congested, the brain, the spleen and kidneys were also congested. The viscera and the vomited matter of the deceased were forwarded for examination, and aconite was detected in them.

Aconite poisoning (toddy)—A man at Dum Dum drank some toddy at 9 P.M. on the night of the 7th April 1906, and died about an hour after. The viscera of the deceased as well as the remnant of the toddy were sent for analysis, and aconite was detected in them.

Aconite poisoning (in pachwai)—Five persons drank *pachwai* in a shop in the district of Birbhum. Soon after they began to vomit and showed other symptoms of poisoning. They all recovered under treatment. Some *pachwai* taken by these persons was sent for analysis, and aconite was detected in it. Some substances which were alleged to have been used for increasing the intoxicating power of the *pachwai* were also forwarded for analysis, and root and aconite *nervonica* seeds were detected in them.

Aconite poisoning (pachwai)—Several persons drank *pachwai* in a liquor shop in the district of Birbhum. Soon after they all suffered from severe burning sensation in the stomach, tingling and numbness of the extremities and vomiting. Six of these persons died, and congestion of the stomach and other internal organs was found in most of the cases on *post-mortem* examination. The viscera of the six persons were sent for chemical analysis, and aconite was detected in three of them. The vomited matter of some of the deceased and a sample of the *pachwai* which they took were also forwarded for analysis, and aconite was detected in them.

Datura poisoning (suicidal)—Suicide by taking *datura* is rather an uncommon incident. The Assistant Surgeon of Ghatal reported a case in which a young Hindu female took *datura* seeds to commit suicide, in consequence of a quarrel with her father-in-law. A quantity of *datura* seeds were found by the side of the deceased. The viscera were forwarded for examination and atropine was detected in them.

Datura poisoning (with robbery)—A man seeking for employment came to Calcutta and was waiting at Kalighat where he made an acquaintance with the accused who offered him some sweetmeat and *pan*, after eating which he became delirious and began to behave like a mad man. He was taken by the police to hospital where the doctor diagnosed the case as *datura* poisoning. The washings of the stomach were sent for analysis, and atropine was detected in them. The man recovered under treatment, and stated that he had Rs 3 annas 8 with him which was missing. As there were previous

convictions against the accused for a similar offence, he was sentenced to 7 years' rigorous imprisonment.

Phosphorus poisoning (homicidal)—A woman was alleged to have administered tips of matches in a betel to her husband, with the intention of poisoning him. The man, on chewing the betel, detected a peculiar taste and smell, and immediately spat it out. The chewed betel was forwarded for examination, and tips of lucifer matches containing phosphorus were detected in it.

Hydrocyanic acid poisoning (suicidal)—A Bengali Hindu, aged about 36, was found restless in his bed for a few minutes and then expired. Two empty phials of hydrocyanic acid were found near the deceased. At the *post-mortem* examination, the stomach was found dilated and empty, the mucous membrane was deeply congested and covered with thick sanguous looking tenacious mucus. No smell of hydrocyanic acid was detected in the stomach. The viscera were sent for chemical analysis by the Civil Surgeon of the 24 Parganas, and hydrocyanic acid was detected in them.

Hydrocyanic acid (theft and murder)—A case of murder by administration of hydrocyanic acid, attended with robbery, occurred in the town of Calcutta in October 1906. A woman of the town was seen drinking with a stranger in her room one evening, shortly afterwards she was discovered by the other inmates of the house lying on the floor, but the stranger was not to be found anywhere. She was placed in her bed and expired soon after. The *post-mortem* signs were consistent with death from heart failure. The chemical analysis of the viscera revealed the presence of hydrocyanic acid. The ornaments of the woman were missing. The murderer still remains undetected.

Opium poisoning (attempt at poisoning)—The Civil Surgeon of Ranchi referred a case in which a woman while preparing unleavened bread, mixed opium with it and gave it to the complainant to eat. The bread was sent for examination, and opium was detected in it.

Chloroform poisoning (by inhalation self administered)—A rather unusual case of suicide by inhalation of chloroform occurred in the town of Calcutta during the year under report. A Eurasian woman was found dead in her bed with a handkerchief on her mouth and nose covered over by a pillow, and a bottle containing chloroform lying near the handkerchief with chloroform bubbling from it. The door of the room was bolted from inside. It appeared that the husband and the wife were not on good terms, and she made a similar attempt on her life with chloroform about six months prior to this incident. There were marks of blisters on her lips and cheek and inside the nostrils, which were the local effects of the chloroform. The mouth, the gullet and stomach showed no signs of irritation. The blood was of a somewhat cherry red colour, and on analysis was found to contain chloroform. The viscera on distillation also yielded traces of chloroform.

Nitric acid thrown over a person—During the strike of the subordinate staff of the East Indian Railway in the month of July 1906, a Bengali officer refused to join the strikers, one of whom, by way of revenge, caused some strong nitric acid to be thrown over this officer by some other persons. The officer luckily escaped severe injuries. The phial containing the corrosive substance was sent for analysis by the Civil Surgeon of Howrah, and it was found to contain concentrated nitric acid. The culprit was convicted and sentenced to two years' rigorous imprisonment.

Filariæ in blood stains (drugging and murder)—The body of a man with a deep wound in the throat was found in a sack which was lying on the doorstep of a house in Radha Bazar Lane. Three Mahomedans, one of whom was the employer of the deceased, were arrested on a charge of murder on the evidence of the wife of one of the accused. The wife said she was an eye witness to the murder. The deceased was given a *hookah* to smoke after smoking he became insensible. He was then held down by his husband while the other applied the knife to the throat, they then put the dead body in

a gunny sack and removed it from the house. The viscera of the deceased were forwarded for analysis, and atropine was detected in them.

The deceased's clothes bore stains of mammalian blood in which *filaria nocturna* was detected. *Filaria nocturna* was also detected in some stains of mammalian blood on certain furniture found in the room of the accused in which the murder was alleged to have taken place, and also in stains on the panel of the door. A cooly's basket, which was alleged to have been used for removing the dead body, was also found in the house, and it bore several patches of mammalian blood containing *filaria nocturna*.

Correspondence

OCCUPATION FOR RETIRED OFFICERS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Can you or any of your numerous readers advise a retired Lieutenant-Colonel, Indian Medical Service (aged 45), the best occupation he could pursue at "Home" or on the Continent?

He has not been able to "shake the Goldmohr tree" during his service.

Also the cheapest way for his wife and self to get a passage home or to the continent.

Perhaps English papers could advise.

NIL DESPERANDUM

DOCTOR'S FEES FOR CANCELLED ENGAGEMENTS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—A solution of the following case, which recently occurred in my practice could probably be useful to junior Civil Surgeons generally.

A Raja, living 14 miles from head quarters, is cited to appear as an assessor in the District Judge's Court. The case is expected to be prolonged and the Raja pleads ill health. The Judge calls for a medical certificate and the Civil Surgeon is engaged to go out to see the Raja on a certain day. On the morning fixed for the Civil Surgeon's visit, three quarters of an hour before the time fixed for starting, the Civil Surgeon receives a letter informing him that he does not require to go. It turns out that the Raja submitted a certificate given by the local native doctor of his private dispensary (under Government supervision—Class V) and this certificate was accepted by the Judge.

Has the Judge power to accept such a certificate without the counter signature of the Civil Surgeon, and is the Civil Surgeon entitled to any fee? In this particular case the Civil Surgeon's touring programme had to be altered and attendance on other private cases postponed in order to fulfil the Raja's engagement. The Raja in question has an annual income of about five or six lakhs.

Yours, etc,

I M S,

19th August 1907

We invite correspondence, ED—*I M Gazette*

THE RIDEAL-WALKER COEFFICIENT

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—We ask a few lines of your space to state that it has been found necessary to substitute the term "Rideal Walker Coefficient" for that originally introduced by us, viz., "Carbolic Acid Coefficient" owing to the abuse of the latter on the part of unscrupulous manufacturers and vendors.

The necessity for adhering strictly to the *modus operandi* prescribed in our test has been strongly emphasised in the last two or three years since we published our method, and that this caution is necessary is shown by the fact that many disinfectants are advertised as having a certain "carbolic acid coefficient" when the figure given has obviously been obtained by methods having little or nothing in common with the test as described in the Journal of the Royal Sanitary Institute, thus introducing confusion and robbing the term of the value it originally possessed. Much of the success of our method is due to the fact that we provide for the postulant and control, being tested not only in the same time but at the same time

As the resistance of the test organism, even when subcultured from the same stock, varies from day to day, it is unfair and misleading to offer a "coefficient" obtained by testing the postulant on one occasion and the phenol control on another. Similarly, when the "thread," "garnet," or any modification of the Rideal Walker test has been employed, information that such a method has been used should accompany the "coefficient" and the latter should certainly never be advertised without this information.

It is, therefore, most desirable that bacteriologists when reporting on the germicidal value of a disinfectant should specify precisely the method employed. Great discredit has been thrown on the Rideal Walker test by the publication of results obtained by the worker modifying the technique—sometimes to a very large extent—without notifying the modification and many of the discrepancies referred to by critics are directly attributable to this fact.

Yours, etc,

SAMUEL RIDEAL

J T AINSLIE WALKER

TWO UNUSUAL POST MORTEMS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—These *post mortems* were both performed by me last autumn, when acting as Civil Surgeon of Mymensingh. The first a Mahomedan male, at 25 years, in good health, died in the Sudder Dispensary from the effects of white arsenic, administered two days before. *Post mortem* he showed in addition to the usual signs of arsenic poisoning (ulceration of the stomach, ecchymosis of the endocardium, etc.), a very curious condition of what was apparently yellow atrophy of the liver. This organ was very soft and shrunken, of an ochre yellow colour, and weighed only 3½ oz. On section it was in texture almost exactly like one of the Indian rubber sponges which are so common nowadays.

I believe this condition of atrophy, or fatty degeneration, is well recognized, though I do not think it can be common. The second case was, that of another Mahomedan, who was beaten to death by repeated blows of some blunt heavy weapon.

His injuries were mainly on the right side of the head and body, and were briefly a fissured fracture extending above the right ear, with an extravasation of blood under it, fracture of the ribs and severe bruising on the right side, and more especially a large rupture on the inner surface of the spleen, from which a considerable amount of blood had escaped into the peritoneum, but which was now completely closed by a strong adhesion to the neighbouring peritoneal surface.

This case of spontaneous closure of a ruptured spleen, is interesting, and I think due to the man living for a fairly considerable time after receiving the injuries, his general blood pressure being so lowered by the injuries to the head and shock, that bleeding from the spleen practically ceased and adhesions had time to form.

Yours, etc,

W J COPPINGER, M D,

Captain, I. M. S.

PURULIA

A CASE OF AN ABSCESS OF LIVER

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I shall feel obliged if you give space to the following case in your popular Gazette—Gujarikom Shakeria, female, at 20, was admitted into Hirekerur Dispensary on 16th May last, with a small opening in the centre of her umbilical depression from which pus was discharging. Previous to this date she was being treated as out-door patient for pain in abdomen.

Previous history—About a month ago she had an attack of fever with chills for two days only, then diarrhoea set in which is still present. It is said that she is habituated to country liquor.

Present condition—Eyes sunken, tongue dry, excessive thirst, pulse 105 per minute, and weak, spleen hard and painful, liver hard and painful, with dullness on percussion, there is pain and tenderness all over the abdomen especially on the hepatic region, about twelve motions per day of watery nature, no pus in them, also no pus in the urine which is passed freely without pain. Is much reduced in strength, there is one opening exactly in the centre of the umbilicus as big as to admit a large sized probe, from this opening 8 to 12 ounces of laudable pus was discharged daily at the time of dressing. On probing the probe reached the lower border of the liver, and the pus came in profuse quantity on pressing the hepatic part of the abdomen. Her temperature was below 103° and

above 99° during the time she was under treatment. She was discharged cured after fifteen days' treatment.

In publishing this case my intention is to show the way how the liver abscess burst through the umbilicus—the pus in my opinion was poured into the cavity of the abdomen and then it made its way through the umbilicus—a curious fact. Second, the abscess gradually emptied itself and got healed under the internal treatment of the drugs only without surgical interference.

Yours, etc.,

HIREAPUR DISPENSARY, } GANESH RAMCHANDRA,
DHARWAR DISTRICT } 1st GRADE HOSPITAL ASST.,
15th June 1907 } In charge Dispensary, Hireapur

Service Notes

THE competitive examination for commissions in the Indian Medical Service was held on the 23rd, 24th, 25th, 26th, and 27th July 1907.

The following is a list of the successful candidates with the marks obtained by them out of an aggregate 5,100 marks, viz. —

	Marks
Hugh William Acton, L.R.C.I., M.R.C.S., Middlesex Hospital	4,120
Vivian Bartley Green Armytage, L.R.C.P., M.R.C.S., University College, Bristol	3,834
Arthur Norman Dickson, M.B., Cantab., L.R.C.P., M.R.C.S., Cambridge University and St Thomas's Hospital	3,689
Arthur Batoum Zorab, M.B., B.S., Lond., L.R.C.P., M.R.C.S., Guy's Hospital	3,561
Alexander Glover Goulhe, M.B., Ch.B., F.R.C.S., Edin., Edinburgh University	3,549
Robert Ernest Wright, M.B., B.Ch., D.A.O., Dublin, Dublin University	3,540
William Hunter Riddell, M.B., Ch.B., Edin., Edinburgh University	3,510
Alexander James Hutchison Russell, M.A., M.B., B.Ch., St Andrews, St Andrew's University	3,464
Dewan Hikumat Rai, M.A., M.B., Ch.B., Edin., Edinburgh University	3,455
Francis Shingleton Smith, B.A., B.C., Cantab., L.R.C.I., M.R.C.S., Cambridge University and University College, Bristol	3,410
Ainold Thomas Densham, B.C., Cantab., L.R.C.P., M.R.C.S., Cambridge University and Guy's Hospital	3,403
Arthur Waltham Howlett, M.B., Ch.B., Vict., Manchester University	3,349
Frederic Allan Barker, B.A., B.C., Cantab., Cambridge University and Guy's Hospital	3,316
Arnold Newall Thomas, L.R.C.P., M.R.C.S., University College, Bristol	3,283

THE War Office announces that the following were the successful candidates for commissions in the Royal Army Medical Corps at the recent examination in London, for which 59 candidates entered —

	Marks
Phillips, T. Mc., Queen's Coll., Belfast	603
Dickson, H. S., St. Bart's Hospital	591
Dawson, G. J., Aberdeen University	586
Byatt, H. V. B., London Hospital	573
Todd, R. E., St. Thomas's Hospital	561
Lamb, T. F., Middlesex Hospital	546
Gibson, H., London Hospital	544
O'Brien Butler, C. P., R. Coll. of Surgeons, Ireland	518
Petit, G., Catholic University, Dublin	514
Hanahan, J. B., Catholic University, Dublin	512
Renshaw, J. A., St. Bart's Hospital	510
Dickinson, R. F. O. T., Catholic University, Dublin	498
O'Farrell, W. R., Catholic University, Dublin	494
King, R. de V., St. Mary's Hospital	493
McGregor, D. B., Aberdeen University	490
Conyngham, C. T., Dublin University	489
Hauscheel, H. McC., St. Bart's Hospital	487
Lloyd, J. R., St. Bart's Hospital	486
Cairson, H. W., Queen's Coll., Belfast	482
Gregg, R. G. S., Dublin University	481
Treves, H. T., St. Thomas's Hospital	474
Dowling, T. F., Catholic University, Dublin	471
Hingston, J. C. L., Middlesex Hospital	462
Stuart, F. J., Aberdeen University	457
Odum, B. A., R. Coll. Surgeons, Ireland	455
Spong, W. R., Dublin University	448
Giant, J. F., Aberdeen University	447
Hart, P. H., Dublin University	441
Jones, A. E. B., Dublin University	440
Hendry, A., Aberdeen University	430

THE following new departure will be watched with interest —

Training and employment of non commissioned officers and men in practical sanitation. — In order to ensure more thorough supervision of sanitary matters in the lines of British troops, non commissioned officers and men to the numbers shown in the following table will be trained and employed on these duties —

	TRAINED		EMPLOYED	
	Non commissioned officers	Private	Non commissioned officers	Private
Battery Royal Horse Artillery Royal Field Artillery or Company of Garrison Artillery		2		1
Regiment of Cavalry	2	8	1	4
Battalion of Infantry	2	16	1	8

2 Their duties will consist in supervising within their lines water supplies, the sale of food (except by regimental institutes), conservancy, cleanliness, disinfection, and sanitary policing generally.

While so employed they should not be detailed for other duties except musketry and the necessary military training compatible with efficiency. When so detailed, Commanding Officers must see that the sanitary service these men are responsible for does not suffer and, if necessary, other trained men should replace them.

3 Classes of instruction will be arranged for annually by Divisional Commanders and will be conducted by medical officers specially selected.

4 The duties of the non commissioned officers and men will be carried out under the immediate supervision of the medical officer in charge of the lines to whom the Commanding Officer of the unit should delegate authority to issue any necessary directions regarding routine sanitary matters.

THE following questions were given at last examination to probationers of I. M. S. in the Royal Army Medical College —

For all Officers

"(1) (a) For what kinds of offences may a private soldier be confined in the guard detention room? (b) State the regulations as regards bedding and exercise for soldiers confined in the guard detention room."

(2) When has the soldier the right to elect to be tried by District Court Martial, instead of being dealt with by his Commanding Officer?

(3) (a) What persons are subject to the jurisdiction of a District Court Martial? (b) What are the powers of a District Court Martial?

For Royal Army Medical Corps Officers only

(4) State the forfeitures of pay (if any) involved in the following cases of absence without leave —

- (a) From 6.30 A.M., January 23, to 6 P.M., same date
(b) " " " " 6 A.M., January 24
(c) " " " " 12 noon, same date
(d) " " " " 2 A.M., January 31

(5) Define the term "Court of Inquiry," and state the duties of a Court assembled to inquire into a case of illegal absence.

For Indian Medical Service Officers only

INDIAN ARTICLES OF WAR.

(6) How can offences by native followers be punished under Indian Articles of War on active service?

(1) Give some of the definitions of "grievous hurt" as laid down in the Appendix to the Indian Articles of War.

Interior economy. — (Royal Army Medical Corps) (Time allowed, two hours.)

(1) What are the various ranks in the Corps, and how would you recognize them?

(2) What is meant by the term "messing and kit allowance"?

(3) What are the total emoluments of an unmarried Quartermaster Sergeant of the Corps?

(4) Briefly describe what is meant by the term "hospital stoppages."

(5) Enumerate the articles of personal clothing, and state what becomes of them when the owner is discharged from the Service

Indian Army Regulations—(Indian Medical Service)
(Time allowed, two hours)

(1) What is the position of a medical officer in charge of a native regiment? What facilities has he with regard to a charger in the case of mounted corps?

(2) What rules are laid down for officers (a) under arrest, (b) on the sick list

(3) Distinguish between dismissal and discharge. When should a man be dismissed and by whom can this be done?

(4) What is the Army Bearers Corps, and what are the Permanent Records of the Corps?

(5) What Boards are held in India for the purpose of invaliding, and what rules are laid down as to their composition?

SURGEON GENERAL G. BOMFORD, M.D., O.L.F., Director General, I.M.S., has been granted a Good Service Pension, £100 per annum during service on the active list, dated from 25th March 1907, in token of Surgeon General A. S. Reid, M.D. C.B., I.M.S., retired.

The following is a précis of Surgeon General Bomford's services—Commissioned as Surgeon, 30th September 1874, Surgeon Major 30th September 1886, Lieutenant Colonel 30th September 1891, advanced Lieutenant Colonel, 21st March 1900, Surgeon General, 1st January 1905. The chief appointments held by Surgeon General Bomford has been as follows—

Attached Presidency General Hospital, and Officiating Resident Surgeon Medical College Hospital May to October 1875, Officiating Professor of Pathology, October November 1875 with 1st Goorkhas November 1875 to 31st March 1876, again at Medical College, and Presidency General Hospital from April to June 1896 with 39th Native Infantry, till February 1877, then Famine duty Madras, February 1877 till end of November 1878, Civil Surgeon Simla, 30th November 1878, till 30th November 1880, Garrison Surgeon, Fort William December 1880 till 15th April 1886 with 22 Gorkhas, April 1886 till June 1886 Officiating Professor of Physiology, Calcutta June July 1886 second Resident, General Hospital, till 19th January 1888, Officiating Secretary to Surgeon General 20th January 1888 till 19th January 1889 Examiner of Medical Accounts, till 20th April 1890, Member of Committee on Medical Stores, and Secretary, Hyderabad Chloroform Commission Civil Surgeon Nagpur April, till November 1890 again Secretary to Surgeon General, 7th November 1890 till 20th February 1893, then Principal and Professor of Medicine Medical College Calcutta, from 21st February 1893, till 15th March 1904, Member of Inoculation Committee 1903 Officiating Inspector General, Civil Hospitals, Punjab, from 16th March 1904 to 15th August 1904, Officiating Director General I.M.S. till 15th November 1904. On special duty revising the medical regulations till 1st January 1905, when he succeeded Sir Benj. Franklin as Director General, I.M.S. War Services, Perak, 1875-6—Medal and clasp

On 1st October 1907 the following Majors, I.M.S., become Lieutenant Colonels I.M.S.—

A. E. Roberts, M.B. (Aber), M.R.C.S. (on furlough)
D. M. Davidson, M.D. (Aber), D.P.H. (Glas.) Civil Surgeon Delhi

F. P. Maynard, M.B. (Durh), L.R.C.P., F.R.C.S. (Eng.), D.P.H. (Camb.), Professor of Ophthalmology Calcutta

J. C. Lamont M.B. (Edin) M.R.C.S., Professor of Anatomy, Lahore (on furlough)

A. H. Nott, M.B. (Durh), Civil Surgeon, Bengal (on furlough)

A. Coleman, M.B. (Edin), Civil Surgeon, Multan (on furlough)

W. W. White, M.D. (R.U.I.) M.Ch., M.A.O. 4th Cavalry, Punjab (on furlough)

D. T. Lane, M.D. (R.U.I.), M.Ch. M.A.O., Civil Surgeon, Punjab (on furlough)

R. C. MacWatt, M.B. B.Sc. (Edin), Agency Surgeon Surgeon U.P.

W. H. E. Woodwright, F.R.C.S.I., L.M. (Rotunda), Civil Surgeon U.P.

J. T. Lloyd Jones, M.B. (Durh), M.R.C.S., Assy. Master, Calcutta Mint

W. J. Buchanan B.A. M.D. (Dub), D.P.H. (Dub), Inspector General of Prisons Bengal, and Editor, *Indian Medical Gazette*

J. K. Close, M.D. M.Ch., M.A.O. (R.U.I.), Civil Surgeon, U.P.

W. E. Jennings, M.D. (Edin), D.P.H., (Royal Coll., Irel.) Health Officer Port of Bombay and Associate Editor *I.M.G.*

F. J. Dewes M.R.C.S., Civil Surgeon Burma

P. O. H. Strickland M.R.C.S. Civil Surgeon, Burma

T. W. Stewart L.R.C.P., (Ed.), Civil Surgeon, Burma

Of this batch which twenty years ago on 1st October entered Netley the above survive. The following officers have died, viz., J. Mercnamara, of typhoid, Holt, killed at Polo,

Ingram (disease not known), and Brabazon, of heatstroke in Calcutta

ON being relieved of his duties as Deputy Sanitary Commissioner Punjab on the forenoon of the 4th April 1907 Captain H. M. MacKenzie I.M.S., was appointed an Assistant Plague Medical Officer Simla and assumed charge of his duties on the forenoon of the 13th April 1907

CAPTAIN C. E. SOUTHERN I.M.S. Assistant Plague Medical Officer Jullundur was placed in visiting charge of the plague operations in the Ludhiana district in addition to his own duties, from the 1st July to the 1st August 1907

CAPTAIN J. G. G. SWAN I.M.S., Officiating Civil Surgeon Shahpur has obtained privilege leave of absence for one month under Articles 250 and 260 of the Civil Service Regulations, with effect from the forenoon of the 5th of August 1907

ASSISTANT SURGEON FIROZ UD DIN in charge of the Civil Hospital Shahpur is appointed to officiate as Civil Surgeon of Shahpur in addition to his own duties with effect from the forenoon of 5th of August 1907 *vice* Captain J. G. G. Swan, I.M.S., proceeding on leave

MAJOR V. E. H. LINDSEY I.M.S. Civil Surgeon Bengal, has received an extension of leave for three days only

LIEUTENANT COLONELS R. J. BAKER and T. Anderson Majors G. McI. Smith and C. Duer I.M.S. have received permission to return to duty. We are glad to note that Major Duer has recovered and is able to return to India for duty

MAJOR A. F. STEVENS I.M.S. Officiating Civil Surgeon Shikharad is allowed privilege leave combined with furlough for eighteen months *viz.* privilege leave for three months under Article 260 of the Civil Service Regulations and furlough for the remaining period under Article 303 (b) of the Regulations, with effect from the date on which he may be relieved

CAPTAIN L. GILBERT I.M.S. M.B. has been appointed Civil Surgeon Southern Shan States Taunggyi, *vice* Lieutenant-Colonel F. J. Dewes, I.M.S., transferred

MAJOR W. SPIRY I.M.S., D.S.O. Civil Surgeon Sitapur, obtained one month's privilege leave from 10th September

LIEUTENANT COLONEL J. T. PRATT, I.M.S. Civil Surgeon, Lucknow held visiting charge of Sitapur during the absence on leave of Major Selby, I.M.S.

THE following notifications appeared in the *Bombay Gazette* of 22nd August—

His Excellency the Governor in Council is pleased to make the following appointments during the absence on privilege leave of Lieutenant Colonel H. P. Dimmock, M.R.C.S., L.R.C.P., M.D. (Dur) I.M.S.—

Lieutenant-Colonel W. H. Quicke, F.R.C.S. (Eng.) I.M.S., to act as Principal, Grant Medical College, in addition to his own duties

Captain E. F. G. Tucker, I.M.S. to act as Professor of Midwifery in addition to his own duties

Lieutenant-Colonel H. P. Dimmock M.R.C.S. L.R.C.P. M.D. (Dur) I.M.S., is granted privilege leave of absence for two months from the date of relief

HIS EXCELLENCY the Governor in Council is pleased to make the following appointments during the absence on privilege leave of Lieutenant Colonel H. P. Dimmock M.R.C.S., L.R.C.P., M.D. (Dur) I.M.S.—

Lieutenant-Colonel W. H. Quicke, F.R.C.S. (Eng.) I.M.S. to act as Senior Medical Officer J. J. Hospital in addition to his own duties as Senior Surgeon J. J. Hospital

Captain E. F. G. Tucker I.M.S., to act as Obstetric Physician J. J. Hospital, and in charge Bu. Motilal and Sir D. M. Petit Hospital in addition to his own duties as Acting Second Physician, J. J. Hospital

HIS EXCELLENCY the Governor in Council has been pleased to appoint Lieutenant-Colonel B. B. Grayfoot M.D. I.M.S., Sind Registration District, in addition to his own duties, with effect from the 16th April 1907

His Excellency the Governor in Council is pleased to appoint Mr C Efford, L D S, to be Honorary Surgeon in Dentistry at the Jamshedji Jyibhai Hospital for a further term of one year

Wearing of Foreign Decorations—The following War Office letter, regarding the wearing of Foreign Decorations is published for information and guidance—

"With reference to the Dress Regulations for the Army, paragraph 26, clauses 7 (b) and 7 (c), I am commanded by the Army Council to inform you that the King has been pleased to approve the following instructions regarding the wearing of a foreign decoration which is permitted to be worn upon certain occasions only—

I The decoration will be worn—

(i) When in full dress, on the occasions specified in the letter of authority

(ii) In miniature, when in evening dress under similar conditions

II The riband will not be worn without the decoration

A foreign medal, the wearing of which has been sanctioned by His Majesty, or its riband, will be worn in all orders of dress in the same manner as British medals

These decisions will eventually be embodied in the Dress Regulations"

THE services of Captain E L Perry, I M S (Bengal), are placed permanently at the disposal of the Government of the Punjab

THE services of Lieutenant A F Hamilton, M B F R C S, I M S, are placed temporarily at the disposal of the Government of Bombay

CAPTAIN W F HARVEY, M L, I M S, is granted privilege leave for three months with furlough out of India for one year and nine months in continuation, with effect from the date on which he avails himself of the leave

THE King has approved of the retirement of Lieutenant Colonel H M Morris, I M S, from 14th May 1907

LIEUTENANT COLONEL W COATES M D I M S, for many years Civil Surgeon of Lahore, is permitted to retire with effect from 1st July 1904

HON'Y CAPTAIN C C CAROL retires from 7th June 1904 and Military Assistant Surgeon J M E Davis from 1st July 1907

In addition to the batch with commissions, dated 29th July 1895 all of whom were promoted to the Majors, I M S, on 29th July 1907, the following officers are also promoted Majors, I M S, from the same date and therefore receive accelerated promotion of six months, viz—

Major A W R Cochrane, M B, F R C S

Major W W Clemesha, M D, D P H

Major J A Black, M B

Major J C Robertson, M B

Major N R J Rainier

Major E L Perry

Major W J Niblock, M B, F R C S I

Of the batch of 29th July 1895, six officers had previously received six months' promotion, viz—

Major J Stevenson, F N Windsor W B Turnbull, E E Waters E M Illington, C G Webster, whose majorities date from 30th January 1907

Royal Army Medical Corps—Specialists—The undermentioned officers are appointed Specialists in the subject noted, with effect from the dates of their taking over charge of their duties—

Prevention of Disease

Major J B Anderson,	} Brigade Laboratory, Bareilly
Captain P S Lelean	
" J W S Seccombe	Brigade Laboratory, Bangalore
" E W Powell	Brigade Laboratory, Belgaum
Lieutenant P Dwyer	Brigade Laboratory, Jubbul pore

Indian Medical Service—Specialists—The undermentioned officers are appointed Specialists in the subject noted, with effect from the dates of their taking over charge of their duties—

Prevention of Disease

Captain E C Hodgson,	} Brigade Laboratory, Ambala
Captain J W S Seccombe,	
Lieutenant J Morrison,	} Brigade Laboratory, Lucknow
Lieutenant J Campbell,	
Lieutenant M F Reaney,	} Brigade Laboratory, Kamptee
Major W J Taylor,	

CAPTAIN T G N STOKES, M B, I M S, Officiating Civil Surgeon, whose services have been permanently placed at the disposal of the Chief Commissioner, Central Provinces, by the Government of India, Home Department Notification No 745, dated the 25th July 1907, is appointed to be a Civil Surgeon of the 2nd Class, with effect from the 18th July 1907 vice Lieutenant Colonel E W Reilly, I M S, retired

LIEUTENANT COLONEL R B ROE, I M S, Officiating Civil Surgeon, 1st Class, is confirmed in that class with effect from the 23rd July 1907, vice Lieutenant Colonel C L Swaine, M D, I M S, retired

CAPTAIN J C S O'LEARY, I M S, Officiating Civil Surgeon, Seoni, whose services have been permanently placed at the disposal of the Chief Commissioner, Central Provinces, by the Government of India, Home Department Notification No 745 dated the 25th July 1907, is appointed to be a Civil Surgeon of the 2nd Class, with effect from the 23rd July 1907

THE services of Captain E C G Maddock, M B, I M S, are placed temporarily at the disposal of the Government of Bombay

THE services of Captain W G Richards, I M S (Madras), are placed permanently at the disposal of the Government of Madras

THE services of Captain R D Wilcocks, M B, I M S, are placed temporarily at the disposal of the Government of Madras

CAPTAIN G I DAVIS, M B, I M S, officiates as Chief Plague Medical Officer, Punjab

MILITARY ASSISTANT SURGEON G F BYERS, I S M D, has joined Civil Medical Department, Punjab

LIEUTENANT COLONEL E C HARE, I M S, Sanitary Commissioner, E B & A, has been granted three months' privilege leave from 11th July and Captain C A Gourlay, I M S, Deputy Sanitary Commissioner, acts as Sanitary Commissioner

LIEUTENANT COLONEL J A CUNNINGHAM, I M S, now Civil Surgeon of Lahore, is placed in charge of Ambala on 1st July 1907 to Major E V Hugo, M D (Lond), F R C S (Eng), I M S

CAPT V H ROBERTS, I M S, has been granted 1 month and 16 days' privilege leave

MAJOR D T LANE, I M S Civil Surgeon, has been granted by His Majesty's Secretary of State for India an extension of study leave for 3 months and furlough for 9 months in continuation of the leave granted to him in Punjab Government Notification No 967, dated the 7th of November 1906

MAJOR E V HUGO, I M S, relinquished charge of the duties of Professor of Surgery, Lahore Medical College, on the afternoon of the 30th of June 1907

MAJOR D W SUTHERLAND, I M S, Professor of Medicine, Lahore Medical College, relinquished charge of the duties of Principal of the College on the forenoon of the 1st July 1907

CAPTAIN W L TRAFFORD, I M S Assistant Plague Medical Officer, Lahore, has obtained privilege leave for 6 weeks under Articles 250 and 260 of Civil Service Regulations, with effect from the forenoon of the 11th of June 1907.

On return from leave Captain H. Ross, I.M.S., resumed charge of the office of Assistant Plague Medical Officer, Ambala on the forenoon of the 14th July 1907. He was then appointed District Plague Medical Officer, Jullundur, and assumed charge of his duties on the forenoon of the 17th July 1907.

Under the provisions of Articles 260, 308 (b) and 233 of the Civil Service Regulations, privilege leave for three months combined with furlough to Europe for nine months, is granted to Captain E. R. Rost, I.M.S., Resident Medical Officer, General Hospital, Rangoon, with effect from the date on which he availed himself of the privilege leave.

The following appointments and transfers are ordered in the Burma Medical Department—

Captain A. Whitmore, M.B., I.M.S., is appointed to officiate as Resident Medical Officer, General Hospital, Rangoon, in place of Captain E. R. Rost, I.M.S., who has proceeded on leave.

Captain R. D. Saigol, M.B., I.M.S., is transferred from Moulmein and is placed on special duty in connection with plague at Rangoon.

Major J. B. Smith, M.B., M.Ch., I.M.S., has been allowed by His Majesty's Secretary of State for India, an extension of furlough for three days.

Major J. B. Smith, M.B., M.Ch., I.M.S. has been allowed by His Majesty's Secretary of State for India to return to duty within the period of his leave.

His Excellency the Governor of Bombay in Council is pleased to make the following appointments—

Captain W. H. Dickinson, M.B., I.M.S., to be Chemical Analyst for Sind and Health Officer of the Port of Karachi, with effect from the 23rd June 1907, and to continue to act as Chemical Analyst to Government, Bombay, until relieved.

Captain A. Miller, M.B., I.M.S., to act as Chemical Analyst for Sind and Health Officer of the Port of Karachi, *vice* Captain Dickinson.

His Excellency the Governor in Council is pleased to make the following appointments with effect from 15th June 1907—

Captain W. H. Dickinson, M.B., I.M.S., Acting Chemical Analyst to Government, and Acting Professor of Chemistry and Medical Jurisprudence Grant Medical College, to be Professor of Physics in the College in addition to his own duties, as a temporary measure.

Dr S. A. Powell, B.A., M.B., Surgeon to the Coroner, Police Surgeon and Professor of Botany, Grant Medical College, to be Professor of Biology in the College, in addition to his own duties.

Dr A. B. Zorab, M.B., B.S. (Lond.), who got into the I.M.S. fourth place as in the list given above, is a son of the late Lieutenant Colonel J. Zorab, I.M.S., who died at Cuttack some years ago where he had been for many years Civil Surgeon.

Captain S. Anderson, I.M.S., Civil Surgeon, Tippera, E. B. and A., has been granted one month's privilege leave from 12th September.

Lieutenant Colonel E. A. W. Hall, I.M.S., Civil Surgeon of Chittagong, has been granted three months' privilege leave from 21st August.

Captain W. Tarr, I.M.S., acts as Civil Surgeon of Chittagong during the absence of Lieutenant-Colonel Hall, I.M.S.

Captain J. M. Woolley, I.M.S., on furlough, has passed the D.P.H. Victoria University.

We note that Major B. C. Oldham, I.M.S., who went on sick leave in July 1906, has been permitted to return to duty.

Captain L. P. Blaisey, M.B., I.M.S., was appointed to hold collateral charge of the Civil Surgeoncy of Bhramo, *vice* Dr C. Martin, on leave.

Captain A. Fenton, I.M.S., Civil Surgeon Burma, was granted study leave from 1st February 1907 till 30th April 1907.

Captain W. S. McGilivray, M.B., I.M.S., has come to District

MILITARY ASSISTANT SURGEON J. Doyl is appointed Civil Surgeon of Waidha, C.P.

MAJOR J. CHAYTOR WHITE, I.M.S., is appointed to be Chief Plague Officer, U.P., and Captain R. F. Baird, I.M.S., to be Assistant Plague Officer, U.P.

MAJOR S. A. HARRIS, I.M.S., is appointed to be Deputy Sanitary Commissioner, 1st Circle, U.P., *vice* Major Chaytor White, I.M.S.

MAJOR E. JENNINGS, I.M.S., on furlough, was on study leave from 19th February to 30th June 1907.

CAPTAIN C. A. GILL, I.M.S., Assistant Plague Medical Officer, Jhelum, got one month and 17 days' privilege leave from 8th June 1907.

His Excellency the Honourable the Governor of Bombay has been pleased to make the following appointment on his personal staff, with effect from the forenoon of the 28th July 1907—

Lieutenant A. F. Hamilton, M.B., F.R.C.S., I.M.S., to be Medical Officer.

CAPTAIN L. B. SCOTT, I.M.S., Officiating Civil Surgeon of Gauhati, got 18 days' privilege leave from 2nd August, and Assistant Surgeon H. K. Das acted for him.

As we go to press the announcement made of the revised rules for payments of subscriptions and donations to the Indian Military Family Pension Fund. A reduction of 25 per cent on subscriptions and donations shows how well founded was the criticism made on this Fund in the pages of the Pioneer and of Truth. We defer consideration of the matter till the Government Resolution is before us.

THE following promotions are gazetted—

Hony Lieut. L. A. H. Clarke, to be Hony Captain, I.S.M.D., Hony Lieut. C. Tonnicliffe, to be Hony Captain, First class Asst Surgeons Ollenbach, Hogan Fox and Minty to be Hony Lieutenants, First-class Asst Surgeon A. A. Cotton, to be Hony Lieutenant, Hony Lieut. M. E. Mungavin, to be Hon Captain, Hony Lieut. P. Victor, to be Hony Captain, and First class Asst Surgeon G. W. Davis, to be Hony Lieutenant.

MAJOR A. W. COCHRANE, F.R.C.S., I.M.S., was granted one month's privilege leave from 28th August, and Lieutenant Colonel Henderson, I.M.S., held charge of the Agra Central Asylum.

CAPTAIN J. C. ROBERTSON, I.M.S., Deputy Sanitary Commissioner, U.P., was on study leave from 14th January to 9th April 1907.

MILITARY ASSISTANT SURGEON A. E. DuBois, I.M.S.D., is appointed to officiate as Civil Surgeon, Naga Hills, *vice* Mily Asst Surgeon H. R. Leonard, granted eight months' combined leave on medical certificate.

BABU GOPAL CHANDRA MUKERJI is appointed to officiate as Civil Surgeon, Dhubri, *vice* Mily Asst Surgeon DuBois, transferred.

MAJOR W. D. SUTHERLAND, I.M.S., Civil Surgeon, C.P., was on study leave from 1st February till 30th June 1907.

THE services of the undermentioned Officers are replaced temporarily at the disposal of His Excellency the Commander in Chief in India, with effect from the dates noted against their names—

Lieutenant Colonel C. Monk, I.M.S. (Bombay)—1st July 1907.

Lieutenant Colonel C. F. Willis, M.D., I.M.S. (Bombay)—24th June 1907.

2 The Home Department Notification No. 564 (Medical), dated the 20th June 1907, is hereby cancelled.

THE services of Lieutenant Colonel F. Wyville Thomson, M.B., I.M.S. (Bengal), are replaced at the disposal of His Excellency the Commander in Chief in India.

CAPTAIN F. N. WHITE, M.D., I.M.S., and Captain E. C. Hodgson, I.M.S., are placed on special duty at the Central Research Institute, Kasauli, under the orders of the Sanitary Commissioner with the Government of India.

THE following appeared in *Burma Gazette* of 24th August —
Mr J David B.A., L.R.C.P. and S. (Edin.), L.F.P. and S. (Glas.) and L.M. (Dublin) who was appointed to be a Civil Assistant Surgeon 3rd grade on probation in this Department Notification No 8 dated the 10th January 1906 is confirmed in that appointment, with effect from the 15th January 1906.

Mr Y Subrahmaniam L.M. and S. (Madras) who was appointed to be a Civil Assistant Surgeon, 3rd grade on probation, in this Department Notification No 104, dated the 9th April 1906, is confirmed in that appointment, with effect from the 6th March 1906.

Mr J S Lamech L.R.C.P. and S. (Edin.), L.F.P. and S. (Glas.) and L.M. (Dublin) who was appointed to be a Civil Assistant Surgeon 3rd grade on probation, in this Department Notification No 177, dated the 27th June 1906 is confirmed in that appointment with effect from the 1st May 1906.

Mr P Radhakrishna Menon B.A. M.B., C.M. (Madras) who was appointed to be a Civil Assistant Surgeon, 3rd grade on probation, in this Department Notification No 259 dated the 18th August 1906 is confirmed in that appointment, with effect from the 11th June 1906.

THE following transfers and postings are ordered in the Burma Medical Department —

Mr A Rahman I.R.C.P. and S. (Edin.) is transferred from Thaton and is placed on special duty in connection with vaccination in the Hanthawaddy District with head quarters at Rangoon.

Fourth Class Military Assistant Surgeon C. D. Delaney is transferred from the Hanthawaddy District to the Civil Medical charge of the Thaton District, in place of Mr Rahman placed on special duty.

Under the provisions of Article 260 of the Civil Service Regulations Second Class Military Assistant Surgeon W. St. M. Hofferman was granted privilege leave for 25 days with effect from the 9th July 1907.

Third Class Military Assistant Surgeon W. R. Bennett officiated as Civil Surgeon of the Lower Chindwin District from the forenoon of the 9th June 1907 to the afternoon of the 2nd August 1907.

CAPTAIN T. H. DELANY, I.M.S., is permitted to return to India.

MAJOR J. T. CAHILL, I.M.S., is to be the next Civil Surgeon of Dajeeeling. He has been glad to say recovered from a long attack of typhoid contracted while Civil Surgeon of Howrah and has gone to the hills to recruit his health preparatory to succeeding Major O. Kinealy at Dajeeeling in November.

LIEUTENANT COLONEL E. HAROLD BROWN, I.M.S. Civil Surgeon Alipore Calcutta, will probably take furlough in November.

THERAPEUTIC NOTES AND PREPARATIONS

THE LAMBERT PHARMACAL CO. of St. Louis, U.S.A. write to inform us that many correspondents in India write to them for samples but give their names and addresses so badly written that they cannot be deciphered, hence delay or non reply to correspondents. The Lambert Pharmacal Co. also ask us to remind our readers that the postage of a letter to the United States is 2 annas, not one anna as in the British Postal Union. Correspondents sending for samples or giving order are requested to very clearly and legibly give their names and addresses.

Mr. Zeal's well known REPELLO Clinical THERMO-METER has received a special award and a Gold Medal at the recent New Zealand Exhibition.

In view of the Infantine Mortality in India on which we recently commented our attention has been called to the purity and value of NESTLE'S MILO FOOD. It consists of pure milk, the only rational basis for any infant's food.

We have received a copy of the balance sheet of the well known Bombay firm of Chemists KEMP & CO., LD. The excellence of this firm's preparations and their known courtesy and attention to the prescription and order of medical men in India render any further reference unnecessary. It is very satisfactory to see the good balance sheet produced. Kemp & Co.'s preparations can be relied upon. We note that a new edition of Kemp's *Prescriber Pharmacopœia* is in the press.

SAL. HEPATICA is a drug which has come to stay, its value as a gentle laxative is well known. It is also antacid and of great value in many conditions of indigestion and diarrhoea. The firm Bristol Myers Co., of Brooklyn, New York, offer to send samples to physicians on application.

'TABLOID' COMPRESSED STERILISED DRESSINGS (BURROUGH WELLCOME & CO.)

In addition to the ordinary packings, 'Tabloid' Pleated Compressed Dressings are now issued sterilised. Busy practitioners will appreciate the convenience of these aseptic dressings, which are packed under sterile conditions in sterilised packets, and remain aseptic until the cover is removed.

In country practice and for emergency work 'Tabloid' Compressed Sterilised Dressings are unquestionably of the greatest value. Their extreme compactness, portability, and reliability render them the most satisfactory for all purposes.

Dr. Benqué & Co. desire us to call attention to Dr. BENQUÉ'S ANÆSTHETIC PRODUCTS, especially their ANETILE, a Mixture of Ethyl Chloride and Methyl Chloride and use for local anaesthesia. It is compressed in strong nickel copper cylinders and is safe from breakage in transport. The same firm have for general anaesthesia a preparation named NARCOTILE, a pure Ethyl Chloride supplied in 50cc graduated glass tubes. Their Ethyl Chloride INHALER has many good points. The same firm supply an ANALGESIC BALSAM, which is used for rheumatism and neuralgia.

It is well known that Chloroform is subject to decomposition by the action of air and ordinary daylight. To avoid all possibility of deterioration from such influences 'WELL-COME' BRAND CHLOROFORM is issued in hermetically sealed amber coloured glass tubes.

'WELLCOME' BRAND ETHER S.G. 720 which conforms to the requirements of the British Pharmacopœia for pure ether is also issued in hermetically sealed glass tubes. By this method perfectly fresh and chemically pure anaesthetics are always available.

In both cases these tubes contain accurately measured quantities and are convenient for charging graduated drop bottles or those employed with inhalers.

'WELLCOME' BRAND CHLOROFORM and 'Well-come' Brand Ether are issued in tubes of 30 cc and 60 cc. They are conveniently portable, since each tube is packed separately in a wooden container in such a manner that there is practically no risk of breakage by accident.

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscriptions to "*The Indian Medical Gazette*," Rs. 12, including postage in India. Rs. 14 including postage, abroad.

BOOKS, REPORTS, &c., RECEIVED —

Diseases of Stomach, Ross English Ed. (F. A. Davis & Co.)
Jackson's Tropical Medicine (Blackiston & Co.)
Plague Committee's Report p. 12, J. of Hygiene
Report of Health of Hong Kong
Man and Abnormal Man, Macdonald (U.S.A., Govt. Press)
Report of Sanitary Commissioner, Burma.
Punjab
Bengal
U.P.
E.B. and Assam
The Bombay Bacteriological Report 1906
Miles and Thomson's Surgery, Vol. 2 T. J. Pentland
The Combined Civil List for India, July 1907
Sea sickness, cause and cure B. N. Bennett (Baillière Tindall & Cox)
Transactions S.I. Branch, B.M.A.
Bengal Vaccination Report

LETTERS, COMMUNICATIONS, RECEIVED FROM —

Lt. Foster Roanney, I.M.S., Kamptee, Capt. Moses I.M.S., Barisal, Dr. Hossack, Calcutta, Dr. Sandwith, London, Major Birdwood, I.M.S., Exmouth, Major Robertson, M.L.S. Berhampur, Capt. Percival Mackie, I.M.S., Bombay, Lt. Col. Morris R.A.M.C., Murree, Lt. Stephen I.M.S., Jhansi, Capt. Kenrick, I.M.S. Saugor, Dr. Thompson Gharwal, Lt.-Col. A. Buchanan, I.M.S. Amraoti, Capt. Symons Madras, Messrs. Saunders & Co., London, Capt. Steen, I.M.S., Sylhet, Major Stevens, I.M.S. Calcutta, Asst. Surgn. DeCruz, Koraput.

Original Articles.

FOWL SPIRILLOSIS *

By M. FOSTER REANEY, M.B. (LOND.), D.P.H.,
LIEUTENANT, I.M.S.

THE following note on Fowl Spirillosis is written, as I understand, that there is no published record of this disease having been previously observed in India, though Colonel Bannerman, I.M.S., tells me that, some two years ago, he found a spirillum in a chukor partridge, which had died at the Bombay "Zoo."

I first saw a spirillum in the blood of a chicken, belonging to a lady in this station (Agar-Malwa), at the end of last March, and have since had further opportunities of observing it. The hen-houses here are infested with ticks, which carry the disease from one chicken to another. From the following brief account it will be seen that the parasite agrees closely with the description of spirillum gallinarum, originally observed in Rio de Janeiro,¹ and more recently by Dr. Balfour in the Soudan.²

The tick, which infests the hen-houses, is a member of the Argas family, the adults being characterized by the absence of a scutum and by the fact that the mouth parts are concealed by the cephalo-thorax. Captain Christophers, I.M.S., tells me that the specimens, which I sent him, are Argas miniatus. Some of the adults resemble closely a photograph of Argas persicus contained in a paper by Lounsbury,³ who thinks that the two varieties are probably identical. These ticks live under the plaster of the mud-walls. If a piece be broken off and the under surface examined, ticks in all stages will probably be found, together with fragile, nearly transparent "casts" or "moulted." Lounsbury divides the stages through which the tick passes, into five, although I have not been able to watch a single specimen pass through the various stages, I have constantly found "moulted" as well as ticks of at least three distinct sizes.

These stages are—

1 *The Egg*—minute brown circular objects, about $\frac{1}{8}$ " in diameter and only slightly adherent to each other.

2 *The Larvæ*—These are small, nearly colourless objects, about the size of a small pins-head, or even less. Each possesses six long legs and the mouth organs project in front of the body. These larvæ attach themselves to a chicken, their favourite site being beneath the wings. They remain attached for several days. At first they are quite difficult to see, but rapidly become darker and larger as they distend with blood. They are difficult to remove, then hold being tenacious. Finally they drop off, become

flatter than previously, and seek the cover of the wall, within a week or two they moult and pass on to the—

3rd Stage—They are now small, flat, oval objects, about $\frac{1}{8}$ " long, with eight legs, and the mouth is on the under side of the body, between or just behind the first pair of legs. It now prefers to feed only at night, and chooses the legs by preference, only taking an hour or so to complete its meal. After a further moult it passes on to the—

4th Stage—in which it is similar but larger. After a third moult it becomes an—

Adult and the sexes are distinguished. According to Lounsbury, the Argas family differ from all other ticks in living for a long time and laying several batches of eggs. The adults vary in size, the females being the largest, some as long as $\frac{1}{3}$ rd of an inch. After they have fed, their bodies are plump and distended, but gradually become flatter, so that a tick that has not fed for some time has a wrinkled appearance.

The Spirillum resembles closely that of relapsing fever and is a slender organism varying considerably in length, some being short about the length of a red blood corpuscle with only a few curves, others at least twice as long with seven or eight turns. In fresh preparations the active movements of the spirillum can be seen. It stains well with Leishman's or Giemsa's stains and in the larger specimens lighter spaces can be seen in the middle and at either end. No internal structure can be distinguished. Tangles are common, particularly, I think, where the infection is severe, they are probably therefore the result of rapid division. Often two specimens can be seen intertwined with each other, probably also the result of division.

The spirillum occurs free in the blood of the infected chicken and consequently in that from most of the internal organs. There is a definite incubation period of some five or six days, in the case described below it was five days before the spirilla appeared in the blood.

To make the above description complete I may mention the following observations on spirillum gallinarum, which I have not been able to see for myself, but which should apply, as I think that this is the same spirillum.

Marchoux and Salimbeni⁴ found that the spirillum can be conveyed by inoculation or by feeding on infected dejecta, as well as by infected ticks, also that serum from a chicken which has recovered from the disease will agglutinate the spirilla in vitro and possesses slight preventative properties.

Boriel quoted by Novy and Knapp⁵ states that it possesses flagella and divides transversely and is therefore not a protozoon. The stained appearance of long specimens look as if it was really two shorter ones joined end to end. Finally Levaditi has cultivated it in collodion sacs placed in the peritoneal cavity.

* Received 14th May 1907, not published through an oversight—Ed., I.M.S.

[Nov, 1907]

The disease in the chicken—It is necessary to separate the results of the tick bites from those of the spirillum. My first four attempts to infect a healthy chicken, by allowing it to be bitten by ticks, were failures. In the first, I tried placing the ticks under the wings, but they were soon destroyed by the chicken. In the next three attempts the chickens were placed in an infected hen-house for the night. This house had not been used for about a fortnight, consequently there were hundreds of hungry ticks waiting for a meal. The consequence was that the chickens died within 24 to 48 hours after being removed from the house, the last one within one hour. In this chicken I found its legs were almost raw with the bites of bigger ticks. *Post-mortem* there was extensive extravasation of blood along the veins leading from the undersurface of the wings. The tick probably injects some substance having a hæmolytic nature, so that death may occur from poisoning associated with the loss of blood.

For the fifth attempt, a strong young cock was taken, and he was placed in the hen-house at night time. Two hours later he was taken out, all ticks seen were removed from him, and he was isolated in a "coop." Next morning it was found that about twenty larvæ had escaped notice and these were allowed to remain under his wings. His subsequent history is as follows—

Fourth day (after he had been bitten)—He seemed 'off colour' and had diarrhoea.

Fifth day—He seemed more unwell, though the diarrhoea had stopped. The feathers under his wings were dropping out. His blood was examined and a few spirilla were found, only four or five in each film. The larvæ were commencing to drop off.

Sixth day—He was very weak in his legs, unwilling to move about, spirilla were plentiful in his blood.

Seventh day—He was so weak on his legs that he could not stand. Crowds of spirilla in his blood, some small "tangles" seen. All the larvæ had dropped off.

Eighth day—He was better, spirilla scanty again.

Ninth day—Much better, could walk though rather ataxic. No spirilla found in his peripheral blood.

He rapidly recovered and was soon apparently normal. He had evidently only had a mild attack. His condition on the seventh day was similar, though less severe, to that observed in other chickens which died. The latter became so weak that they could not stand or even lift their heads from the ground, death usually being sudden. A *post-mortem* on one of these showed that the spleen was enlarged, the heart dilated and full of unclotted blood in which the spirillum was found.

Marchoux and Salimbeni* state that the attack may be acute or chronic, the latter lasting for

two or three weeks, the chicken becoming cachectic and finally dying suddenly or recovering. The loss of the feathers from the under-surface of the body and wings is common, and is, I think, entirely due to the ticks.

The Spirillum in the Tick—A number of large wrinkled ticks were allowed to feed on the cock mentioned above, on the second day on which spirilla were found in his blood. This was accomplished by tying a gauze bag over the cock's head, and placing another bag round one leg, in which the ticks were placed and allowed to remain for two hours. Eight days later squash preparations were made of one of these ticks and many spirilla were found. Where-as on the day the tick fed, very few "tangles" were found in the blood, in the tick there were many large "tangles," and as there seem to be the result of rapid division, for they are commoner in severe infections, the spirillum must multiply within the tick.

Twelve days after feeding some of the ticks began to lay eggs. I have examined a good number of these eggs, but up to the present have not found the spirillum in them, nor have I found it in the larvæ. Koch has found spirilla in eggs, when investigating African tick fever. Marchoux and Salimbeni† state that a tick can convey infection after five months and Lounsbury‡ has found that the fowl tick can live for a year without feeding.

As far as I can discover, there has been no importation of chickens into Agai, at all events for the last twelve to eighteen months, from anywhere except surrounding villages. As Agai is a small station over forty miles from the railway, it is unlikely that natives would go to the expense of importing chickens from distant parts, and no European has done so. Pigeons and ducks are also attacked by this tick, but I have not found a spirillum in their blood up to the present.

To sum up—

- (i) Fowl spirillosis occurs in Central India
- (ii) It is carried by a tick of the Argas family, probably identical with *A. miniatus*
- (iii) The spirillum is apparently identical with *Spirillum gallinarum*

I have particularly to thank Colonel Bannerman, I.M.S., and Captain Christophers, I.M.S., for the loan of literature on the subject, and the latter also for identifying the tick.

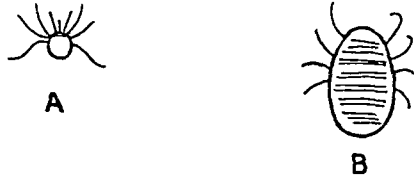
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FOWL SPIRILLOSIS

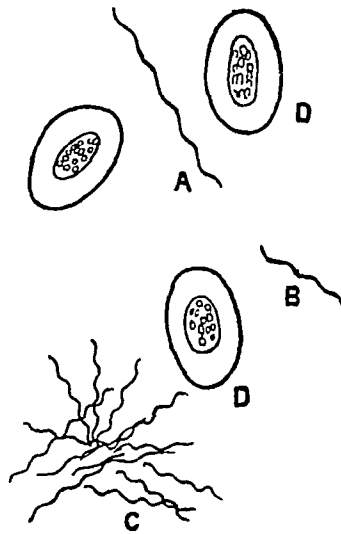
By LIFUT M FOSTER REANEY, M B (LOND), D P H, I M S

ARGAS TICK (Diagrammatic)



- A Larva, about 5 times natural size
B Adult female, about twice natural size

SPIRILLUM



- A Long form
B Short form
C Tangle
D Nucleated Red Corpuscles

BLACKWATER FEVER IN JEYPORE AGENCY

BY F G DECRUZ,

Asst Surgeon, I S M D, Koraput, Jeypore Agency Tracts.

HAVING noticed some correspondence in the *Indian Medical Gazette* regarding blackwater fever, I send you notes on four cases observed by me, two cases recorded by my predecessor in office, and seven cases reported by others.

Case No I—Hindulad, aged 6 Had been in Koraput for over a year Had frequent attacks of malarial fever Was given quinine sulphate after every attack of fever On the 19th August 1905, after an attack of fever, I gave him 5 grains of sulphate of quinine After a few hours a rigor came on with a temperature of 104° , vomiting and dark red urine There was jaundice Temperature came down to normal after 24 hours with cessation of vomiting—the urine cleared During the fever urine was scanty On the 22nd August 1907, I paid my usual morning visit and found the boy quite well, but very weak I advised his being kept in bed In half an hour the father came running to me to say that his boy had got out of bed and had fainted I found him unconscious with a failing heart In spite of all I did, he sank and died after an hour This patient was subject to convulsions

Case No II—The writer's wife, aged 24 Came to Koraput in January 1905 First attack of fever, April 1905 Had fever every month for two or three days Was taking sulphate of quinine as a prophylactic, grains 10 every week from January On the 1st October, three hours after the usual dose of quinine patient got a severe rigor, rise of temperature to 104° and vomiting Urine was dark red in color The urine cleared up next morning after 24 hours and temperature came down to normal After this quinine was stopped, there was great prostration The next attack of fever was on the 11th On the 20th morning she was given 15 grains of euquinine In two hours a severe rigor came on, temperature rose to 105° Urine passed soon after, was copious, but of a dark port wine color After this urine became scanty but of the same color Next day there was suppression of urine which lasted for nearly 24 hours There was jaundice Vomiting started after the rigor and kept on for ten days in spite of every treatment, and did not stop till patient was removed to the plains Temperature came down to normal the morning after the attack, and remained there till the 8th November, when an attack of ague came on while in the plains She next suffered from fever from the 6th to 24th December at Peshawar Her blood was examined, and it was said to be full of malarial parasites She refused to take any quinine there and only grains 2 were given She came back to Koraput in February 1906, and has lived here since then without getting a single attack of fever and without taking a single grain of quinine, or course strictly keeping under the mosquito curtain at nights

Case No III—Hindu female, aged about 45 Had been in Koraput for a year Had attacks of malarial fever on and off Was in the habit of taking quinine sulphate as a prophylactic frequently About the 2nd May 1906, after an attack of fever, she took quinine of her own accord On the 3rd May I was called in and found her with fever She complained of difficulty in passing urine, and backache The quantity passed was scanty and dark red in color She was very jaundiced Bowels loose from a dose of calomel, dark green in color Vomiting incessant With all my advice she would not keep to bed but went out to defecate and urinate which was pretty frequent It was supposed to be against delicacy to use a bed pan She was extremely weak from the beginning and died on the 6th of heart failure High temperature lasted only two days No suppression of urine, but very scanty

Case No IV—Hindu female, aged about 40 Had been in Koraput for about a year Had attacks of fever on and off Was in the habit of taking quinine sulphate from the post office On 19th October 1906, feeling feverish, she took a powder (7 grains) The next morning another powder In an hour or so a severe rigor came on, followed by high fever, dark red colored urine, vomiting and jaundice This patient also would not keep to bed and use a bed pan There was rapid prostration and death on the 22nd October from heart failure A high temperature only lasted for two days No suppression of urine, but very scanty

EXTRACTS FROM CASES RECORDED IN HOSPITAL BY ASSISTANT SURGEON MACDONALD, L M & S

Case No V—Hindu Police Inspector, aged 28 Admitted into hospital 7th May 1903 Some days before admission he felt ill and was given some quinine and phenacetin Had fever up to the day of admission with incessant vomiting No urine passed the day before admission

Condition on admission—Skin had a yellowish tinge, and the conjunctive and sclerae were jaundiced Hicough very troublesome Some tenderness in the right hypogastric region Passed 2 drams of urine dark reddish yellow When shaken into a froth the froth was yellow Temperature 99.6°

8th May 1903—Had two motions of a brownish yellow color Urine in 24 hours 1 oz, loaded with albumen and froth yellow

9th May 1903—Urine for 24 hours $1\frac{1}{2}$ oz, color dark reddish yellow Loaded with albumen and contains bile pigment Vomiting Temperature 98°

10th May 1903—No urine since last morning Three motions of a dark color Restless Declines to sleep in the room and lies down in the verandah (Was taken home the previous evening by relatives) Died 2.30 P.M.

Case No VI—Hindu, Government clerk, aged about 33 Admitted 13th November 1904 Had intermittent fever for four days On the 12th he took grains 5 quinine It was the only dose of quinine he had taken since the present illness began About 4th or 5th of the month he had a day's fever and took some euquinine On admission temperature normal In the evening he said he passed urine of an iron colour A little passed in my presence had the color of venous blood The sclerae were slightly tinged yellow Temperature 103° Incessant vomiting

14th November 1904—Jaundice deeper Temperature 102° Urine resembles porter with an iron grey deposit 35 oz passed in 24 hours Vomiting persistent and exhausting

15th November 1904—Temperature normal Vomiting frequent Urine 24 oz during night Color like port wine When shaken froth is of a deep yellow color Urine contains quarter albumen Pulse 70 Passed 16 oz of urine during day

16th November 1904—Urine reddish yellow color He declined to take any more medicine from me and put himself under the treatment of a native physician

28th November 1904—Is completely cured and attended to work

Notes—The patient returned from leave and was seen by me after I relieved Mr Macdonald After his return he used a mosquito net, but suffered from a few attacks of fever I induced him to take Hydrochlorate of quinine in 5 grain doses in m. presence which had no ill effect on him He finally left for the plains on transfer

NOTES FURNISHED BY REV E SELL, SCHLESWIG HOLSTEIN LUTHERAN MISSION, KORAPUT

Case No VII—Rev T, European Suffered from blackwater fever some years ago His kidneys have been weak ever since and he is now in the plains undergoing treatment for his kidneys Was in the habit of taking quinine for years for malarial fever Went to

Europe after the attack. Suffered from malarial fever on and off after his return and took smaller doses of quinine. Has lived in these parts for over 20 years.

Case No VIII—Rev W, European. Suffered three times from blackwater fever. Suffered also from malarial fever on and off and took plenty of quinine. After the third attack went to Europe and returned in 1900. Came out to India for the first time in 1895.

Had fever again and took quinine several times. Fourth attack of blackwater fever in November 1904 when travelling in the villages (November is a very cold month here). Suffered from fever from 10th to 30th, and during this attack noticed the black urine.

Case No IX—Rev L, European. First arrival in India, 1893. Suffered from malarial fever and took plenty of quinine. Got an attack of blackwater fever in May 1897, when going down to the plains. Had another attack in Waltan. Went to Europe. Returned to these parts and suffered from ordinary fever and took small doses of quinine. Is now in Europe.

Case No X—Rev K, European. First arrival in India, 1896. Suffered from malarial fever and took quinine in unusually large doses. In October 1899 went to the plains and got an attack of blackwater fever. Went on a voyage to Rangoon to shake off malarial fever from which he was still suffering, but came back to Vizagapatam, still bad. There he again got "bleeding of the kidneys" and died in May 1890.

Case No XI—A Christian mission boy, native of these parts. Had blackwater fever in 1907 with black urine and very yellow skin. No vomiting. Was travelling when he got the attack in the cold weather.

OTHER REPORTED CASES

Case No XII—A European official, aged 28. In Koraput for a short time. Had fever off and on. On the 28th June 1898 went out 28 miles on duty. Returned on 3rd July suffering from fever. Took quinine. There was vomiting. Would not keep to bed and died of blackwater fever on 5th July 1898.

Case No XIII—A European official. In Koraput for about a year. In the habit of taking quinine frequently. Had malarial fever. In June 1906, when suffering from a slight attack of fever went out shooting and was in water up to his waist. Says he caught a chill. Returned and noticed high fever, and black urine which lasted a few days, and patient was cured, after treatment. This happened when on tour from Koraput.

OBSERVATIONS.

1 All the cases are among Europeans, Eurasians and natives of the plains. The hill tribes rarely suffer from malaria, and blackwater fever among them is never heard of, except case No 11, observed and treated by Rev E Sell.

2 Only new arrivals in these malarious tracts suffer from blackwater fever. Case No 8 suffered the fourth time in 1904, but as he returned from Europe in 1900 he may be taken as a new arrival.

3 Blackwater fever occurs in those who have had several attacks of malarial fever.

4 These patients have all been in the habit of taking quinine sulphate for a long period, and the immediate exciting cause in the majority of cases is a dose of quinine.

5 The urine was never examined before the blackwater fever in any case except case No 2, whose urine on a few occasions showed traces of albumen. Case No 1 suffered from convulsions. Case No 3 said, she always had backache and urinary troubles. Case No 7 had "weak

kidneys" after the attack, and is now in the plains undergoing treatment for "weak kidneys." I think, the kidney is the seat of congestion before the quinine precipitates blackwater fever.

6 All cases occurred during the rains and cold season. The weather begins to cool during the rains in May and June and lasts till October. The cold weather commencing in November and ending in February. A chill may therefore be the starting point in the kidney. Case No 13 shows a distinct history of chill. Cases 5, 8, 9, 10, 11 and 12 were travelling in the wet and cold weather. Case No 13 was also travelling. Case No 7 was in the habit of touring in the villages.

7 There is extreme weakness, and unless patient is kept absolutely at rest, a fatal termination ensues.

8 Cases Nos 6, 7, 8 and 9 have taken small doses of quinine after their attack of blackwater fever and suffered from no ill effects.

9 Treatment in cases 1, 2, 5 and 6 was Extract of Cassia Beareana, also in cases 7 to 11. For 4 and 5 I had none of the drug in stock. Case No 13 was treated in Jeypore.

10 I have not observed blackwater fever in people who have made this their home for several years, although they get malarial fever and take plenty of quinine.

WHAT IS REALLY KNOWN OF THE CAUSE OF ELEPHANTIASIS *

B. S. R. CHRISTOPHERS, M.B.,
CAPT., I.M.S.,

Superintendent, the King Institute, Madras

I AM conscious to-night that I am reading a paper upon a disease with which you are more familiar than I am myself. My excuse must be that the causation of elephantoid condition to a pathologist appears as yet inadequately investigated. Even if the primary cause is, as generally accepted, the presence of the *filaria nocturna* in the lymphatics, the method of working of the cause is imperfectly, if at all, understood.

Elephantiasis arabum is so well known here in Madras that any description of it on my part would be a work of supererogation.

From its geographical localization to the tropics, there is the presumption that it is a disease due to some specific organism and it is generally admitted that this organism is the *filaria nocturna*. The grounds upon which this assumption rests are, briefly—

The close geographical relationship of the disease to the distribution of *filaria nocturna*.

Not only is the distribution of elephantiasis in the different countries of the world coincident with areas of intense filarial infection, but a close

* Being a paper read at a Meeting of the S. India Branch of B. M. A.

relationship has been shewn by Daniels, Thornhill and others to exist in the local distribution of the two conditions. Thus in British Guinea, Daniels has pointed out that the coast natives who suffer much from filaria nocturna infection are very prone to elephantiasis, but that the tribes in the interior who are not subject to the filaria are free from elephantiasis. Thornhill shewed a similar condition in Ceylon. A point of interest with regard to British Guinea is that in the interior the tribes are subject to infection with filaria ozzardi, the adults of which however do not inhabit the lymphatics but are found in the connective tissue at the base of the mesentery and similar positions.

As regards racial incidence the same holds good—where there is much filariasis there is elephantiasis. A curious point brought out in certain figures given by Vincent with the object of shewing the racial distribution of filariasis and elephantiasis is that the latter is in Trinidad at least distinctly more frequent than the former. For example—

333 Blacks,	49 %	had filariasis	65	elephantiasis
122 East Indians,	24	do	32	do
55 Whites,	10.9	do	14.5	do

Arguments based on geographical and racial distribution are however, like statistics, rather a weak staff to rely upon in arriving at the truth regarding a disease. I would remind you that at one time sleeping sickness was considered to be due to filaria perstans on account of an apparently similar geographical distribution. One must always bear in mind too that, from the nature of things, conditions may be associated without having a direct relation to each other, e.g., malaria and mosquitoes have a real relation, malaria and swamps, and so malaria and frogs, though they, from the nature of things, often occur together, are not intimately or necessarily related.

Perhaps more cogent than any other reason is the fact that elephantiasis is presumably due to blockage of the lymph channels, and granting this, we are thrown back on practically the only cause conceivably able to do this, the filaria nocturna. I add presumably because I would draw your attention to the fact that actual observations, especially accurate and detailed observations on the point are strangely absent from the literature of the subject, and that on the analogy of pachyderma lymphangiectatica, a disease described in temperate climates, it is possible that a condition like elephantiasis might be due in the main to strictly local conditions. Pachyderma lymphangiectatica is stated to follow repeated attacks of erysipelas, and it is conceivable that local blocking of lymphatics by widespread and repeated inflammation might cause elephantoid conditions.

(2) The association of elephantiasis with other diseased conditions, some of them undoubtedly due to filaria, such as lymph glands, lymph scrotum, etc.

Of conditions associated with elephantiasis and with filariasis there are many. In our present connection such conditions have interest chiefly in so far as they have been shewn by actual observation to be associated with the presence of the filaria nocturna.

Filarial lymphangitis—Many authors have described among filarial communities attacks of lymphangitis which they believe to be due to the presence of the adult worm. Perhaps of all observers Col Maitland, I.M.S., has done most to clear up the exact nature of this condition. He was, I believe, the first to remove adult filariae from the living body, and a case described by him is very instructive.

A man was admitted with acute lymphangitis running up one arm, and with filarial embryos in his blood. After the subsidence of the inflammation, Col Maitland with the object of removing the adult worm and preventing possible further consequences of its presence, cut down upon and removed a portion of the still thickened lymphatic cord. In this were no less than 7 adult filariae. As embryos were still present in the blood, he later removed the remainder of the cord in which were two more adult filariae. The embryos were still present in the blood, a point we shall refer to later.

Funchane describes attacks of lymphangitis in Fiji, where filariasis is rampant as being extremely common, and notes that a termination in abscess is very usual. Almost every native in some parts of Fiji according to this author has three or four such attacks in the year.

Primrose notes a case where an attack of lymphangitis in the neck ending in abscess was followed by the disappearance of filarial embryos from the blood.

Daniels, Young and others have also removed adult worms from the lymphatics of the extremities.

In lymphangitis, therefore, we have ample evidence that the condition is due to the actual presence of the adult filaria in the lymphatic at the seat of mischief.

I would only draw attention to the large number of worms usually found.

Varicose Lymph glands—This condition which is frequently noted in relation with filarial disease has often been considered as due to blockage to the return of lymph from the glands involved. There is, however, abundance of evidence to shew that another condition altogether really exists. A case given by Eve McCarthy and Barnard is particularly illuminating. A man was admitted with large lymph gland masses in both groins. In his blood embryos were abundant. On removing the glands the authors found them to be alive with adult filariae, and they state that at least 12 filariae were present in the glands or in the dilated lymphatics in connection with them. In this case, and one has little hesitation in extending such an observation to other cases, the dilatation of the

lymph sinus was due not to blocking of the lymphatics above the lesion but as described by Eve McCarthy and Baird to "direct obstruction and irritation of parent filarial worms"

A local cause such as described will explain why, as pointed out by Crawford, operation on lymph glands is followed by excellent results. If, as has sometimes been thought, the glands are due to blockage higher up, one would not expect operation to do much good.

Lymph scrotum—This condition also has been found associated with the actual presence of adult filariæ. Primrose quotes a case where two adult worms were found.

Lymphatic varix chyluria and some other conditions are also associated with filariasis, but observations regarding the exact conditions present are too few to allow one to fix more than a general relationship with filarial infection.

In all the conditions described the presence of adult filariæ at the seat of mischief is very noticeable. Another point worthy of notice is the large number of worms responsible for the condition. When one considers Maitland's case where after the removal of nine adult worms, embryos were still seen in the blood, and cases like that described by Eve McCarthy and Baird, and when one bears in mind the extreme fineness of the parent filariæ and the ease with which many may be overlooked, one sometimes wonders whether, not half a dozen, but some hundreds of worms are not present in many cases of filariasis, and whether Europeans may not often harbour one or two more often than is suspected. The comparatively small number of embryos from such a worm would probably make it easy to overlook their presence. I think at any rate the old notion which one may still derive from text-books, that all the ills of filariasis might arise from perhaps a single parental worm lying somewhere in the thoracic duct, is to say the least inadequate.

Certain observations regarding the absence of filarial embryos in the blood of patients suffering from elephantiasis.

Curiously enough the paradoxical fact that filarial embryos are generally not found in elephantiasis cases is a strong reason for believing that elephantiasis is due to the filaria in some way causing blockage of the main lymph channels.

James, as a result of the examination of 400 specimens of night blood, has shewn that whilst of the ordinary inhabitants of Quilon at least 50 per cent shew the embryos, cases of elephantiasis rarely do so. Other observers have made similar observations, and there can scarcely be any doubt as to the fact that in advanced elephantiasis one does not usually find embryos.

On general grounds, then, there is very considerable evidence in favour of the assumption that elephantiasis is due to lymphatic obstruction by the filaria nocturna, and though one does not suppose that the worms themselves can

do so, it is easy to believe that by setting up active inflammation, or even as pointed out by Daniels, hæmorrhage, the lymphatic trunks may become occluded.

The difficulty is in explaining how with so complex a collateral circulation the blocking can ever be so complete as to lead to the terrible conditions one so frequently sees.

One can indeed only suppose that with an enormous number of adult filariæ inhabiting the pelvic lymphatics, these should one by one become obliterated, or that the thoracic duct or some main lymphatic channel is occluded.

Even then would this account for the conditions, for how can the frequent limitation of the disease to the scrotum or the exclusion of the penis from the condition when the scrotum is involved be explained? Maitland, as a result of his unique experience, is evidently not of opinion that blocking by the adult worm can cause elephantiasis, for he says "The case furnishes another proof, if this were wanting, that the lesions produced by the adult parasites themselves are not such as result in elephantiasis and lymphangiectasis. Although the small colony of filaria had managed to set up local irritation and inflammation of the lymphatic, yet the main circulation of the lymph through the limb was in no way interfered with." Even Manson, the chief exponent of the filarial view of elephantiasis, has doubts as regards blockage by the adult worms as in itself a sufficient explanation, and he postulates in addition the blocking of glands by aborted embryos. At present it is not possible to consider such an explanation more than a theory, for though Manson on several occasions found such undeveloped embryos in juice from glands, I am not aware that a single observation exists shewing that glands are ever blocked with these. If this explanation is the correct one, the examination of glands by histological methods should either confirm or dismiss the theory. It is only strange that no one has thought of looking to see if the glands in elephantiasis are blocked.

Very little attention also ever appears to have been given as to the localization of the blocking, presuming that this is in the larger lymph channels or glands. We have several areas to consider the leg, the scrotum, the testicle and the penis. The superficial lymphatics of the leg enter the series of glands arranged about the saphenous vein, the deep lymphatics, two or three glands lying on the femoral vein.

The efferent lymphatics from these glands then pass upwards to terminate in the *External Iliac* glands which receive in addition the efferent lymphatics from glands about *Poupart's* ligament, draining the lower part of the trunk gluteal regions, perineum and genital organs.

A complete blocking of the external iliac glands of one side would block the supply of lymph to the leg, scrotum and testicle, but in

the case of the penis there would be a collateral supply, for the superficial vessels of the penis end in a dorsal trunk which bifurcates and the deep vessels end in the internal iliac glands. To block the lymphatic of one leg apart from the scrotum, the blockage must be at or about the femoral glands. To block the scrotum apart from the leg, it must be at or about the glands on Poupert's ligament.

In both cases superficial glands should be the seat of obstruction, and it is impossible to believe that they should become blocked without enlarging or giving some very distinct sign of such obstruction.

If the larger lymphatic trunks are blocked, both limbs and scrotum together with the testicle and penis should be equally elephantoid.

I do not wish to labour any of the points I have indicated, but I think I have brought forward enough to maintain what I said before, namely, that we are greatly in want of actual observations on the disease.

SOME RECENT DEVELOPMENTS IN EYE SURGERY

By JAMES M. MACPHAIL, M.A., M.D.,
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ONE who visits the hospitals at home after an interval of say ten years, is chiefly impressed by the progress that has been made in two respects—in bacteriology, and in the utilization of electricity, both for diagnostic and therapeutic purposes. This applies to the ophthalmic in fully as great a measure as to the other departments. It was my privilege last winter to see a good deal of the work in the Glasgow Eye Infirmary, under Dr. Freeland Ferguson, who told me that he never operates upon an eye—except in acute glaucoma where there is so great a risk in delay—without first testing it bacteriologically. And by means of these tests he can foretell with confidence what the result of the operation will or would be. The presence of the *staphylococcus aureus*, the *pneumococcus*, or the *streptococcus*, means that, if operated upon, the eye would probably suppurate. If *staphylococcus albus* or *longus* is found, nothing worse than conjunctivitis will result. If these be absent, there is no fear of septic mischief, whatever other accidents may happen. During the nine years that he has carried out this regime, Dr. Ferguson has not lost an eye from suppuration. When pyogenic bacilli are found, no antiseptic is used, the eye is irrigated once a day with a pint of sterilized saline solution, until the germs have disappeared. Eye surgeons at home do not seem to anticipate the possibility of septic infection subsequent to operation, due to rubbing with a dirty finger, for example, which we have only too good reason to regard as one of our risks in India. Still, infection at the time of operation is no doubt the

most serious danger to which the eye is exposed.

The usefulness of modern electrical appliances in eye work was illustrated by a case I saw in Glasgow. A young man was brought into the Eye Infirmary with the story that a piece of red-hot steel had entered his eye. There was a wound of the cornea, and the ophthalmoscope showed that the lens was already becoming cataractous, but no trace was seen of the foreign body. A Skiagraph, however, located it quite distinctly, and the fragment was extracted by means of the electric magnet through a small opening in the sclerotic.

Excision of the lachrymal sac seems now to be the recognized treatment for dacryocystitis. Dr. Macmillan, of Glasgow, who has performed this operation in a great many cases, says he has never found it necessary to excise the gland or observed any trouble in the way of epiphora. Having got rid of a diseased lachrymal sac, the eye seems to become reconciled to doing without one altogether.

The operation of expression for trachoma is not new, although I do not remember either hearing or reading about it in student days, but it has become more popular in recent years, chiefly, I think in America. Trachoma itself had practically disappeared from Britain, but it is being re-introduced by the Russian Jews and other aliens who, on account of this disease, have been refused admission to the United States. But one does not often get the opportunity of seeing it operated on, as many surgeons object to these cases being received into hospital, preferring to make special arrangements for treating them in private. In my own limited experience the operation, with Knapp's roller forceps, has not been a brilliant success. The cases apparently cured were those which would have probably shown equally good results with the copper sulphate, and in severe cases the operation had to be followed by caustic treatment before much effect was produced. With practice, however, better results may be secured. It is a painful operation, for which at home chloroform is considered to be necessary. I have found, however, that the free injection of eucaine into the lids, with instillation as well, has been sufficient.

Evisceration or exenteration of the eyeball has for long been recognized as an alternative to enucleation, except in the case of malignant growths, but it, too, seems to have become much more popular in recent years. This is probably due to the fact that more importance is now attached to cosmetic considerations than formerly. There is no doubt that to leave the sclera with the muscles intact is to provide a much better stump for an artificial eye. It is also a simpler operation, which can be performed in an emergency with local anaesthesia. My own impression has been that it does not afford such immediate relief as enucleation does in cases of panophthalmitis. Mule's modification, or

addition, of inserting a glass bead is now well known, but Dr Maitland Ramsay of Glasgow has recently introduced a further refinement. He performs enucleation in the usual way except that he sutures each rectus tendon to the conjunctiva before dividing it. After the eyeball has been removed, the capsule of Tenon is packed with gauze, while a purse-string suture is inserted into the conjunctiva.

The gauze is then removed, the recti muscles put on the stretch, and melted paraffin injected into the space formerly occupied by the globe. The muscles are united by catgut sutures, the purse-string tightened and tied, and a bandage applied. The result is said to be a good movable stump. Some time ago Ramsay reported 22 cases with four failures. There might be a danger in India of the paraffin becoming deliquescent in the season when our ink grows solid and our butter fluid. Other operations, similar to Ramsay's but with the insertion of one of Mule's spheres instead of the paraffin, have been devised for removing the globe and preserving a movable stump. In sclero-optic neurotomy, again, and in eviscero-neurotomy, as practised by Ernest Hall and Huizinga respectively, to evisceration is added an excision of the posterior part of the scleral cup and resection of the optic nerve.

Sympatheticotomy, first performed in 1897 by Jonnesco, is the excision of the superior cervical ganglion of the sympathetic nerve by an incision behind the sternomastoid muscle, down to the vertebral column, for the cure of glaucoma, or, failing that, for the relief of pain. There is a full description of it in a book, *Modern Ophthalmology*, by Professor Ball of St. Louis, published in 1904. At that time 100 cases had been reported, with one death from accidental infection. The immediate results are said to be the relief of ocular pain and an improvement in vision with, sometimes, a reduction in ocular tension. In many cases, this improvement is not maintained, but Ball is inclined to think this is due to the fact that hitherto the operation has been reserved for desperate cases in which no good was to be expected from iridectomy. He believes the operation would give more satisfactory results if performed earlier.

Some of the other points of interest in Ball's book are the recommendation to inject normal salt solution into an eyeball that has collapsed after a free loss of vitreous, and to practise the subconjunctival injection of corrosive sublimate, (from 1 in 1,000 to 1 in 30,000) in cases ofritis, cyclitis, or sloughing corneal ulcer. The excision of staphylomata is condemned as liable to cause panophthalmitis or "sympathetic inflammation", enucleation or Mule's operation is to be preferred. It is also stated that in some cases where leucomata were tattooed and the pigment became absorbed, it was found that the vision had improved. So some surgeons now practise tattooing without ink, simply

needling the opaque surface to promote absorption. In suppuration of the cornea after cataract extraction, the following subconjunctival injection is recommended—Cyanide of mercury 1, acorn 10, normal salt solution 1000—a few drops to be injected through an indurized platinum needle from a perfectly clean syringe, three times a day. Under cataract operation we are also told that when both cataracts are mature, the surgeon is quite justified in operating on both at once if that suits the convenience of the patient.

In the above reference to sympathetic inflammation, the inverted commas are ours, for Mr Percy Dunn has just been declaring that there is no such thing. The idea of an inflammation caused by sympathy is, he says, quite contrary to the teaching of modern pathology. The correct term is infective cyclitis. In a septic wound of the eye, especially in the ciliary region, toxins are produced, which carried by the blood, set up inflammation in the ciliary region of the other eye, because they find there the most suitable soil for their development. It is certainly our common experience that we see cases of this kind much more seldom than the teaching of the older books led us to expect, and the thought must have occurred to most of us that in former days a great many cases attributed to "sympathy" were simply due to sepsis. We see a great many cases still in India where an eye has been destroyed apparently as the result of the couching of a cataract in the other eye, and according to Mr Dunn this is just the kind of injury—a penetrating wound by a septic instrument—that is most likely to lead to infective cyclitis. Mr Dunn's experience is that even such wounds are less dangerous when treated by the "open" method, permitting of the free access of antiseptics.

The visitor to an ophthalmic clinic at home will also be struck with the prominence now given to heterophoria (with esophoria, exophoria, hyperophoria as subdivisions) and other anomalies or deficiencies of the muscular apparatus. The means of diagnosis and of estimation are very ingenious, and the treatment by tenotomy or advancement sounds very simple.

A very long paper might be written about operations and methods of treatment that have been introduced and have again gone out of fashion. The production of traumatic cataract and the subsequent removal of the lens for high myopia seems to be less practised now than it was a few years ago. It has been followed in a good many cases by separation of the retina, an accident to which highly myopic eyes seem specially liable. The transplantation of cornea in cases of total opacity seems to have really advanced a stage further towards being thoroughly established, in the hands of Fuchs and other surgeons who take the graft from an enucleated human eye. It requires

a large clinic to afford the necessary material for this procedure. At Vienna two surgeons work simultaneously, one removing a disc in order to make a window in the leucomatous eye, while the other is enucleating. It is said that it is necessary to avoid opening Descemet's membrane in the leucomatous eye, as contact with aqueous humour destroys the graft.

Of new drugs, the most important are the substitutes for nitrate of silver and cocaine. Protargol is certainly less painful than the nitrate, and argyrol is so non-irritating that it is injected into the eye, in a 20 per cent solution, to control intraocular suppuration. Used in this way, it is said to be more efficacious than Haab's iodoform rods or discs. Eucain, novocain, holocain are all less toxic than cocaine, and the two latter are equally soluble. Holocain has the further advantage of being to some degree antiseptic. Atropin and eserine have now many rivals too. Ball strongly recommends arecolin instead of either eserine or pilocarpin in corneal ulcers as less irritating. Dr Hinshelwood of Glasgow says diosmin is the best thing for clearing up corneal opacities. He uses it as an ointment beginning with 4 per cent and increasing the strength to 12 per cent, at first once and then twice daily. The preparations of the suprarenal capsule are too numerous to mention and sufficiently well advertised to make further reference to them unnecessary. As an antidote to the craving for novelty, let me conclude with the prescription for Mackenzie's Eye Wash, which I find in a twenty-year old note book. It was a favourite preparation more than 50 years ago. One of our Glasgow surgeons, Professor George Buchanan, had served in the Crimea, with the troops investing Sebastopol. He used to tell us that when that fortress fell, he entered with the troops and made his way to one of the Russian hospitals. Picking up a piece of paper from the floor, he found it was a prescription, in Russian, for Mackenzie's Eye Wash. It is as follows—

R	Hydrarg Perchlor	gr 1
	Ammon Chlor	gr vi
	Extr Belladonn	gr x
	Cocci Cacti	gr iss
	Spirit Tenuior	3i

Rub up and add water to 3vi. Sig. mix with equal parts of boiling water and bathe the eye.

ON SOME FORMS OF HEADACHE *

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THERE are a large number of forms of headache, which are quite unconnected with any defect in the eyes. Again, there are many forms of headache, which owe their cause to easily

diagnosable eye affections, such as Glaucoma, Iritis, etc. With neither of these does this paper attempt to deal.

Lastly, I come to the large class of cases in which headache and other evidences of asthenopia are to be accounted for either by the presence of an error in refraction or by what is now known as "an error in the muscular balance of the eyes." It is only to a part of this class even that I desire to direct your attention. The larger errors of refraction lead to a sensible diminution of visual acuity, and at once direct the attention of the patients, the friends or of the patients themselves to the cause of the trouble. Likewise a marked strabismus is not easily overlooked, and will drive even an ignorant person to seek medical relief, with the key of the trouble as it were in her or his hands.

Strange as it at first sight may seem, these marked cases of ocular defect are not always productive of headache. The reasons for this are not however hard to find. Lastly, I come to the class of cases of which I wish to speak to you to-day, viz., the lesser or latent errors of the intra or extra ocular mechanism, which may lead to chronic asthenopic symptoms.

It very frequently happens to me to meet with such cases in which able and well-known medical men have exhausted the whole battery of their medical armamentarium, before it has occurred to them to think that possibly the patient's "whole trouble lies in his or her eyes." Again I meet with cases, such as a medical man here present recently sent me, in which the patients have steadily rejected the advice to obtain an expert opinion on the condition of their refraction on the ground that they could see as well as any one else, and therefore it could not be their eyes which were at fault.

It would be beside my present purpose to enter into a detailed description of the anatomical arrangements of the intrinsic or extrinsic musculature of the eyes, but I may be permitted to recall a few simple facts to your memory.

The external and internal recti are respectively pure abductors and adductors. The superior and inferior recti beside elevating or depressing the eyes are adductors, whilst the two obliques are subsidiary abductors.

The superior recti and the inferior obliques elevate the eyes, whilst the inferior recti and the superior obliques are depressors.

The superior recti and superior obliques are internal rotators, i.e., they turn the vertical meridian of the eye in such a direction that its upper end approaches the mid-nasal line, whilst the inferior recti and obliques are external rotators of the same meridian.

If you will consider this very complicated apparatus for a few moments at your leisure, you will be struck with the intimate interweaving of physiological function it indicates, and you will appreciate better the elaborate system of musculature which many a thousand

* Being a paper read at a meeting of the South India Branch of B. M. A.

generation has built up for the eyes of the human race. You will be impressed with the unanimity of the old theory which attributed to the pure abductors and adductors respectively the whole responsibility for the correct supervision of the movements of convergence and divergence. It will be plain to you that we should look on adduction and abduction as complicated actions, the product of the blended physiological activities of many muscles. Again, I would ask you to call to mind how the human race has made use of this intricately woven system of muscles. We have made great progress since the time, when in 'the first red dawn of man,' the use of an opposing thumb led our remote ancestors to pick up the objects they found in their path and to scrutinize them with their eyes. On that opposing thumb hung the destinies of higher evolution, inasmuch as it paved the way for cerebral development, which again reacting on the musculature of the eyes established a basis for ever-increasing intellectual advancement. This is leading me however from my immediate subject. With the scrutiny of near objects, we believe, awoke the impulse for accommodation, and for convergence. Side by side through countless ages grew these two wonderful functions intimately, blended, closely interdependent, and essential for the highest development of "the hen of all the ages."

Gentlemen, there is a drawback to all elaborate apparatus, be it human or mechanical, it is liable to break down. Its very elaborateness is its greatest danger. It will do better work than simpler mechanism, but the more elaborate it is, the greater is the danger that it will run out of gear, should aught untoward befall it. I need not waste time in telling you how much the normal eye owes to the interdependence of its functions of accommodation and convergence, but I do wish to impress on you how easy it is for a very small fault to throw the whole mechanism out of gear. Just as a loose nut, or a tiny leak will stop a complicated engine and render it temporarily useless, so a small fault in one or more muscles may throw the whole musculature of the eye into disorder, and bring in its train a system of symptoms whose gravity seems out of all proportion to the apparent insignificance of the lesion in question. I am convinced of one thing, that not a few of the diseases which we treat patients for and think they have convalesced perfectly from, leave a stamp for all future years on the muscular balance of the eye. Influenza and diphtheria are probably the two most dangerous diseases in this particular line. Again, many patients are born with faulty muscular balance, though this may not be revealed till either some great strain or the advance of age lays its finger on the weak spot and exposes the defect to the patient in a school of suffering, from which he is fortunate if he is delivered by a correct diagnosis of the cause of his infirmity. I fre-

quently meet with men and women who regard themselves as always having had excellent sight and who find it hard to believe that their eyes are alone responsible for all the misery they have been suffering. Long service in India, prolonged lactation, the too rapid bearing of children, a long course of malaria, a severe operation, or any similar cause of debilitation may be the first factor in awaking a trouble whose course may easily be life long, unless effectively dealt with.

The point to which I have been leading up, is that a harmonious relationship must be maintained between the reflex actions of accommodation and convergence. It is possible for this to be disturbed on either side. The state of the refraction may be such that an undue or an overdue effort of accommodation may be called for, whilst on the other hand the extrinsic musculature may, owing to a fault in innervation or in the state of one or more of the muscles, be unequal to the necessary exertion or may over-exert itself, when called into action. All that is present may be a tendency to abnormal deviation of the optic axes. This tendency may be suppressed by a farther muscular effort, and may remain only a tendency, whilst at the same time giving rise to asthenopic symptoms of considerable gravity. By the Maddox Rod test, by the aid of Stevens' photometer, or by still other means it is possible to convert the tendency to deviation into an actual deviation, to ascertain its precise nature and to measure its amount.

To the conditions we are discussing Stevens gave the name of Heterophoria. Others have spoken of it as 'suppressed squint'. The latter term is good enough so long as we remember that the boundary line between a suppressed and an actual squint may never be passed, though lifelong inconvenience may be caused by the condition. Heterophoria may be sub-classified into Esophoria (a tendency to inward squint), exophoria (a tendency to outward squint), hyperphoria (a tendency to the upward deviation of one axis) and cyclophoria or twisting of the eye.

Heterophorias, like apparent squints, may be classified into the paralytic and the concomitant, and the diagnosis between them rests on the same factors as are taken into account in differentiating ordinary squints. The only thing to bear in mind is that one must first make the heterophoria apparent by one of the methods above sketched. One can then proceed to a diagnosis in the usual way.

In conclusion, I have a very few words to say on the headaches caused by minor errors in refraction apart from any co-existing heterophoria. The more intellectual, the more observant and the more highly strung an individual is, the more likely is he to suffer severely from the results of small errors in refraction. Hyperopia is more likely to lead to asthenopia

than myopia is Astigmatism is also in both hyperopia and myopia a fruitful source of trouble. The natural consequence is that it behoves us to make our methods of diagnosis as perfect as possible. I therefore think that a short demonstration of the methods I now use may not be without interest to you.

THE RADICAL CURE OF HYDROCELE

A FURTHER COMMUNICATION

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SINCE sending for publication the paper on the above subject which appeared in the May number of the *Indian Medical Gazette*, I have had a further experience of upwards of 30 cases in hospital and private practice. They all proved successful and in no case was recurrence found to have taken place. The sac varied in thickness. In two other cases the operation by incision and eversion of the sac had to be abandoned in favour of partial excision, as the sac was too thick and adherent to be satisfactorily turned. In another case the fluid was found a dark chocolate colour. This was let out and the sac everted in the usual manner with perfectly satisfactory result. This was in reality a hematocele and gave no more trouble as regards operation than a simple hydrocele.

Since my previous paper was sent for publication I have read a paper entitled "*Operative Treatment of Hydrocele*" by S. C. Paul, M.D., F.R.C.S., published in Vol. II, Part II, 1905, of the *Journal of the Ceylon Branch of the British Medical Association*. Dr. Paul says— "Till October 1898 the majority of the cases of Hydrocele in the surgical wards of the General Hospital of Colombo were treated by tapping and injection with either a solution of Iodine or a solution of Perchloride of Mercury. In only a few instances was my open operation performed, and this was the operation of partial excision of the sac which was introduced by Von Bergman. This operation was resorted to only in those cases where tapping and injection had failed, or where the hydrocele was large. It was not an operation of choice. Partial excision of the sac leads to a good deal of hæmorrhage from the cut ends of the tunica and if the sac happens to be thickened, the hæmorrhage is very profuse. The only satisfactory method of dealing with this hæmorrhage consisted in applying several ligatures to the bleeding points or in making use of a continuous suture round the margins of the cut ends of the sac. Even in spite of this some oozing does take place which necessitates the use of a drain. From the difficulties experienced in keeping the scrotum aseptic, it will be readily understood what difficulties the surgeon has to face in keeping the scrotal wound aseptic. Further, unless the surgeon uses a strictly aseptic absorbable material for his ligature, such as sterilized catgut, there is always trouble with stitch abscesses. Silk sutures are not readily absorbed in the scrotal tissues and sooner or later a stitch abscess results. These considerations led Lt.-Col. Pratt in 1898 to devise a new operation which he styled "Incision and eversion of the sac for Hydrocele." Dr. Paul then quotes Pratt's description from the *Indian Medical Gazette* of August 1898.

It would appear from the correspondence that has been published in the recent numbers of the *Indian Medical Gazette* that the subject is not yet thoroughly worked out and that there are still points of interest worth consideration. Lockwood in his very instructive and highly practical book entitled "*Hernia, Hydrocele and Varicocele*" says "The operation for the radical cure of chronic hydrocele of the tunica vaginalis is

one of the safest and most satisfactory in surgery, and I know of hardly any class of patients who are so profuse in their expressions of gratitude. It is not, however, justifiable unless the most stringent precautions be taken." These are words of encouragement and warning. For the information of those who do not possess a copy of Lockwood's valuable book, I shall briefly quote some of the chief complications he has met with. These will serve to keep operators on their guard. They are—

- (1) Congenital inguinal hernia, with hydrocele of the testicular part of the processus vaginalis
- (2) Congenital funicular hernia and an encysted hydrocele of the cord, the latter was betwixt the hernial sac and the tunica vaginalis
- (3) Hydrocele of the sac of a congenital funicular hernia, with polypoid growths into the sac
- (4) Hydrocele of the sac of a congenital funicular hernia
- (5) Acquired hernial sac and an ordinary hydrocele of the tunica vaginalis, the sacs being distinct from one another
- (6) Acquired hernial sac with its neck packed with omentum and its fundus full of hydrocele fluid

He has not met with an infantile hernia combined with hydrocele, hernia and encysted hydrocele of the epididymis or hydrocele of the processus vaginalis in cases of undescended testis.

Lockwood's experience appears to have been large and varied. It would be interesting to know to what extent these complications have been met with by surgeons in India, whose opportunities are greater as regards hydrocele than those of surgeons in Europe. A statement of complications met with in the East with details of treatment in each case would furnish very valuable information. In reading Lockwood's book I was immediately struck by the fact that no mention is made of the radical cure by incision and eversion of the sac. The operation done by him is excision of the sac, which is cut away to within a quarter of an inch of the testicle and epididymis, the hæmorrhage is stopped by clamping and tying the bleeding vessels, and a drainage tube is introduced and fastened with a suture. In cases complicated with hernia this latter is dealt with at the same time according to recognized methods. In the 50 odd cases treated by me I have not met with a single hernial complication. There appears to be no reason why, after treating a hernia, the tunica vaginalis of a hydrocele should not be treated by incision and eversion instead of by excision. This is a subject that might usefully engage the attention of surgeons in the East, if it has not already done so.

From the list of complications enumerated by Lockwood some idea can be formed of the dangers involved by the Iodine injection method, which should, I consider, never be resorted to, except perhaps in very special cases after careful examination of the hydrocele to exclude hernia, and when the patient refuses operation. Besides being uncertain, the so called cure by injection, according to Lockwood, gives the patient an additional disease. In 4 cases operated on by him after the Iodine injection method had been done, he found in 3 the testicle was enlarged and chronically inflamed, months afterwards and in the 4th there was still a nodular condition of the testicle and epididymis. In 2 out of these 4 no adhesions had formed, in one the visceral and parietal layers of the tunica vaginalis had become irregularly adherent, so that the hydrocele fluid was contained in 3 sacs instead of one. In the fourth only slight adhesions had formed in the lower part of the tunica vaginalis, and amongst these was a thin-walled cyst containing about 2 drachms of clear and yellow fluid.

Dr. Paul, in the paper previously quoted, gives details regarding a modification introduced by him. He says—"When I took charge of the surgical wards from Dr. Thomas in April last I saw three cases which

had been operated on by Dr. Thomasz some time back, in whom the deep stitch used had given rise to suppuration. This observation led me to modify the operation. Instead of making an incision over the scrotum which is difficult to keep clean, I make the incision opposite the external abdominal ring. The incision is an inch and a half in length. The cord is exposed, but care is to be taken that its sheath is not opened into. In small hydroceles by making pressure on the scrotum in an upward direction the tumour can be made to project outside the wound. The sac is now incised and enlarged sufficiently to allow the testis to be turned out. I do not make use of any sutures to fix the cut ends of the tunica behind the epididymis. After everting the sac I return the testicle with the everted sac into the scrotum. All bleeding vessels are twisted and the edges of the wound brought together either by collodion or sutures. I have operated now on 26 cases and the results have been very satisfactory. The advantages of this modification are obvious. The skin wound is placed over a region which can be cleaned more thoroughly than the scrotal skin. It can, moreover, be kept clean, which is rather a difficult thing to do in the case of the scrotal skin especially in the tropics. There are no buried sutures to give any trouble. The operation is very simple, does not take more than 5 to 10 minutes. The only precautions necessary are to observe strict asepsis to avoid opening the sheath of the cord and to avoid disturbing the cord from the bed in which it lies." I have fully quoted Dr. Paul's instructions as there are many points that would lead to a difference of opinion. I would in the first instance state that Dr. Paul's so called modification is not original as it is referred to in Lockwood's book. He says "In some cases of hernia and hydrocele it was possible to deal with both the hernia and the hydrocele through the usual inguinal incision." It must be remembered that in these cases the inguinal incision was made specially to deal with the hernia, and, where possible without extending the incision into the scrotum, with the hydrocele as well. In uncomplicated chronic hydroceles Lockwood uses a scrotal incision and with "strict asepsis" primary union should be obtained without stitch abscess or other suppuration. Further, in small, uncomplicated hydroceles it is not understood why the incision over the external abdominal ring should be preferred to an equally short incision in the scrotum, when by the former there is risk of injuring the spermatic cord, and, in the pushing of the testicle upwards, the cord may unnecessarily be twisted or disturbed from the bed in which it lies. The inguinal incision also unnecessarily weakens the abdominal parietes, and, in the case of even medium sized hydroceles, the testicle and a thickened sac could hardly be squeezed through an incision only an inch and a half in length. In opening the sac it has to be remembered that the testis and epididymis may lie in front. Their exact position would be easier to determine and injury to them avoided where a scrotal incision is made than where the incision is in the inguinal region. Dr. Paul does not suture the cut ends of the tunica, but recurrence is apt to take place as happened in one of Major Barry's cases (vide his letter in the July number, *Indian Medical Gazette*). As regards the kind of suture to be used, some prefer catgut to silk. I have used both with satisfactory results. The great point is asepsis and it is possible to have an aseptic suture. The dressing of the wound is also a detail that must be carefully attended to. Lockwood recommends dusting it with finely powdered iodoform, thoroughly covered with 5 per cent carbolic gauze wrung out in 1 to 2000 bichloride of mercury lotion, covered with alembroth wool and finally protected from exposure to air by an outside dressing consisting of eight fold dressing of carbolic gauze and jaconet, accurately cut to pattern and fitted to suit the case. At the end of a week the stitches are removed and the line of incision protected with collodion iodoform.

I have read with interest the letters in the recent numbers and desire briefly to touch on some of the more important points. I agree with Major Barry that one stitch is sufficient and necessary to keep the sac satisfactorily everted. This has been done by me in all my recent cases. Dr. Apte depreciates the use of even a single stitch, but, without statistics as to results, one cannot be sure that recurrence did not sometimes occur as in the case reported by Major Barry. As regards drainage, I do not think this is necessary in hydroceles with thin sacs, as there is practically no hæmorrhage. In all other cases it is probably advisable to avoid the formation of hæmatoma in the loose cellular tissues of the scrotum. As regards the placing of the drainage tube, Lockwood says "This tube is sutured into the upper angle of the wound. This is not the most dependent part, but the fluids of wounds do not always obey the laws of gravitation. Furthermore, when the tube is placed below, the fluids more easily soak beyond the lower edge of the dressing and allow infection to spread from the anus to the wound." The drainage tube he uses is $\frac{1}{2}$ inch in diameter and long enough to reach to the whole length of the wound. Dr. Apte refers to 2 cases in which scrotal hernias had "abdominal limbs" and one died in 10 days. In this connection I must once again allude to Lockwood, who says—"Before operating particular attention should be given to the spermatic cord. In nearly all cases of ordinary passive hydrocele the cord above the swelling is normal and its various contents can be felt with the finger and thumb separate and distinct from one another. Any hardness or thickening is a suspicious circumstance. In the case of a boy with hydrocele of the funicular part of the processus vaginalis, closely simulating a hydrocele of the tunica vaginalis, the cord was slightly thickened and very hard. It contained a serous canal, which led upwards towards the abdomen and ended above in quite a large hernial sac, which was treated by the usual operation of radical cure. In the case of a young man the cord was slightly thickened and very hard. It contained a long narrow canal, filled with a strip of chronically inflamed omentum." Dr. Apte's third case, "congenital hydrocele," was particularly interesting, and it would be still more interesting to know if the patient at any subsequent time suffered from hernia. The small warty exuberances in the testicle and tunica I have frequently noticed. Lockwood says "The small projections look so like tubercles that I have frequently had them examined for tubercle bacilli, but neither Professor Kanthack nor my colleague Dr. F. W. Andrews has succeeded in finding that microbe."

In the *Indian Medical Gazette*, August 1906, pages 325-6, Major Gabbett gives details of a case of abscess of the scrotum mistaken for a strangulated hernia. The abscess was opened, but the patient subsequently died. This case is very similar to Dr. Apte's second case referred to above. The scrotal abscess in both cases was probably a suppurated hydrocele communicating with the peritoneal cavity. In the September 1906 number of the *Indian Medical Gazette* page 366, Major Gabbett furnishes details of a case of hydrocele that occurred about 6 months after Bassini's operation for the radical cure of hernia. The hydrocele was treated by incision and eversion of the sac. During the next four days the temperature continued to rise progressively, accompanied by considerable pain and swelling of the scrotum. The cord was felt to be thickened up to the internal ring. The sutures were all removed, but not a trace of suppuration was found. The testicle and cord were seen to be acutely inflamed and thickened. A nick was made in the neck of the everted tunica vaginalis where it appeared to be pressing on the cord and gauze drainage inserted above and below. A good deal of serum escaped, the pain and fever subsided and the patient recovered without further trouble. Major Gabbett then asks the following questions, which have not yet been replied to by any correspondent.

(1) Was the hydrocele a result of pressure on the cord due to insufficient room left for it in the closure of the canal?

(2) Was the orchitis the result of the same cause?

(3) Does eversion ever cause orchitis by the pressure of the collar of everted sac round the cord?

(4) Was the orchitis due to both these causes acting together?

I am inclined to think that the hydrocele may have been due either to insufficient room left for the cord in the closure of the canal or possibly to some subsequent torsion of the cord or to both these causes. About 6 weeks ago (June 1907), I was fortunate enough to have an interesting case under observation, at the Myitkyina Civil Hospital, a child aged about two years, suffering from a distended scrotum, about the size of an orange with great tenderness of the spermatic cord and testicle. On examination it was found that there was an unhealed superficial wound about $2\frac{1}{4}$ inches long in the inguinal region at the external abdominal ring. The history was that the child about a fortnight previously had been operated on at the Maymyo Civil Hospital for the radical cure of a scrotal hernia. Six days after operation the child was removed from that hospital and brought to Myitkyina. The tunica vaginalis appeared to be distended with fluid and a slight impulse was felt at the external abdominal ring when the child cried. The external wound was treated with antiseptic dressings and took about three weeks to completely heal. During this time the scrotum became distended and the swelling subsequently subsided no less than three times. On each occasion when it swelled up, the tunica vaginalis appeared to be distended with fluid and the testicle and cord were very tender. In this case it would appear that the cause was probably temporary pressure on or torsion of the cord caused by movements of the leg during fits of crying. There has been no recurrence since the external wound healed and the operation for hernia appears to have been successful. In the *British Medical Journal*, 30th March 1907, page 743, W. Gifford Nash, F.R.C.S., gives the history of two cases of recurrent torsion of the spermatic cord. In both cases there was swelling of the testicle and tenderness of the cord. In one case the slight temporary twist of the cord was caused by rotation of the body caused by the use of a crutch by a schoolboy who suffered from a stiff ankle. In the other case, an adult 25 years of age, the swelling occurred no less than three times a year, during 10 successive years, generally after unusual exercise. On one occasion when the testis was considerably swollen and tender the patient was immediately relieved when the testicle was twisted by the surgeon two half turns to the left. From these two cases it is evident that in the operation for hernia or that for the radical cure of hydrocele it is necessary to see that there is no torsion of the cord. In Nash's second case the torsion of the cord had been relieved on all previous occasions without the assistance of the surgeon. The child whose case I have reported will, as far as possible, be kept under observation as it will be interesting to know if there are any recurrences or if a chronic hydrocele results.

The orchitis in Major Gabbett's case was probably due, after the second operation, to the smallness of the collar of the everted sac which appeared to be pressing on the cord. When the collar was nicked, the pain and fever soon subsided. It is quite possible that there may have been some slight torsion of the cord which was relieved in the subsequent manipulation.

As regards Major Gabbett's third question, I am unable to say whether the everted sac *per se* causes orchitis. In thickened sacs, which have been freely dissected away from the subcutaneous tissues and slung on to the cord, it is reasonable to suppose that the additional weight temporarily imposed on the cord, if the scrotum and testicles are not sufficiently supported by the external dressings, may produce slight pressure on or torsion of the cord sufficient to cause an orchitis. I have frequently found that when the dressings have

become loose the patient complains of pain in the cord and also in the umbilical region on the same side. The former is usually relieved by raising the scrotum and supporting the testicle. The umbilical pain has so frequently occurred that I am inclined to attribute it to a dragging on or a slight inflammation of the gonio-crural nerve, which is derived from the first and second lumbar nerves and runs along the anterior surface of the Psoas muscle. In Nash's 2nd case the patient complained of pain in the lower abdomen. If the collar of the everted sac is not sufficiently loose, the circulation of blood is interfered with and there may be not merely orchitis but a sloughing of the sac. It is necessary therefore to see that the collar is sufficiently wide and that the testicle is well supported till such time as adhesions have taken place between the sac and the tissues thereby taking off the temporary weight imposed on the cord.

In the archives of the Middlesex Hospital, Vol. VIII, in a paper on Rupture of the Tunica Vaginalis in Hydroceles, Hastings directs attention to a rare lesion which does not appear to have attracted much attention in England and Germany and gives a full report of a case of this kind which, it is believed, is unique in the clinical records of the Middlesex Hospital. In describing the symptoms of this lesion, the author states that a sudden feeling of something tearing or giving way is followed at first by severe pain and by an increase of the swelling of the affected side of the scrotum. After the next twelve hours ecchymoses appear over the scrotum, and the oedema, with more or less discoloration, slowly spreads to the penis, to the opposite side of the scrotum and at times to the lower part of the abdominal wall. When there is but slight scrotal effusion, the condition may closely resemble a hæmatocele, and it is probable that not a few cases diagnosed as vaginal or parietal hæmatoceles arise in this manner. The oedema generally begins to subside after a few days, and has entirely disappeared in two or three weeks, but as a rule the hydrocele soon refills. In apparently every case of ruptured tunica vaginalis in which this membrane has been carefully examined it has been found diseased. The usual cause of the rupture is some form of injury, as a knock or blow, or a forcible muscular effort, but so called spontaneous cases undoubtedly occur in which rupture takes place without any apparent cause. I have taken Hastings' description from the *British Medical Journal* Epitome, 12th January 1907, page 6. About six months ago a Burman, Mg Po Tha, aged 43 years, was admitted into the Mergui Jail. When he was being examined in the usual way on admission, two scars were noticed on the anterior surface of the scrotum, one on either side of the middle line. The man informed us that these were the places where his double hydroceles had burst and emptied themselves. He says this has happened about ten times in 13 years. The last time was about a month before admission to jail. On each occasion, after some itching of the scrotum without any injury to the part, he felt as if something had burst. The tissues became infiltrated as far up as the penis, the skin of the scrotum then burst and water oozed out for three days when the tumour subsided and the opening in the skin healed up. The sac refilled usually within a couple of months. At the time of examination there was no fluid in the sac, which felt thickened. The scrotum was somewhat pendulous and there was no hernia. He also stated that he had slight fever each time before the sac burst and some pain over the external abdominal ring. This case is of interest inasmuch as the ruptures had occurred so many times and were spontaneous.

I was pleased to read in Major Barry's letter dated 17th May 1907 that the operation by incision and eversion of the sac had been done by him "quite 10 years ago." When I began the operation in 1905, I knew nothing of what Pratt had written. I was guided merely by what I had read in certain volumes of the

Therapeutic Gazette In saying that the operation had apparently been done for the first time in Burma in 1905, I was led to believe that such was the case as I was unable to find any reference to the operation in the usual statements attached to the printed Annual Reports of the Inspector General of Civil Hospitals. The operation by incision and eversion had probably been shewn under that by excision. It is very gratifying to find that Burma was so early in the field. In America the first operation is said to have been done by Keen in 1901. As I can find no reference in European or American literature to Pratt's description, the operation in these countries appears to have been suggested from some other source and is never alluded to as "Pratt's operation for hydrocele."

THE OPERATIVE TREATMENT OF HYDROCELE

By L. M. BANERJI,

ASST SURGEON,

General Hospital, Howrah

I HAVE been following with interest the observations of your numerous correspondents with reference to radical cure of hydrocele by the operative method. This has led me to describe my experience in about 250 cases operated on in the Medical College Hospital, while I was House Surgeon there.

The first case I saw operated on was by the old excision method in which the excised margin of the sac was sutured to the skin incision and the whole left to granulate up. I saw several cases done similarly and found that they took a considerable time for the operation itself, while in every case the patient was not discharged till after three weeks. The attendant bleeding after excision, and the time it took for suturing were serious drawbacks, not to mention the time that the patient had to lay up for recovery.

No doubt, these facts led Col Pratt to devise the simpler method of evagination of the sac and closure of the wound without any damage. I cannot explain how this operation is described in the International Text book of Surgery as the "So called Doyns's method." I notice that one of your correspondents has made a similar remark in the August issue.

The next method I saw was excision of the sac with closure of the skin wound, leaving a small drain for 48 hours, after which the drain was removed and the wound left to heal up. This method shortened considerably the stay in hospital for the patient, but the time it took to check the bleeding of the excised portion of the sac was about the same as in the first method. Besides it necessitated a change of dressings after 48 hours for removal of the drainage.

Lastly, the well known Pratt's method was followed and it gave the very best results.

In the excision methods in which the wound was closed, there have been cases described in which recurrence had taken place, a very serious drawback amounting to its being a no better operation than the primitive tapping and injection method. But my personal experience in this method of operation is almost nil, and I have never had any opportunities to watch its result afterwards.

During the time I was House Surgeon in the hospital, the evagination method was invariably followed. At first the incisions were always lateral and extending for the whole length of the hydrocele. In double ones there were made two lateral incisions, one for each side and were closed separately. The whole tumour was separated out from the wound, the sac opened, emptied and turned inside out and fixed in that position with a fine catgut stitch. The sac was never scraped unless it was extremely thick and had deposits on it. The whole wound was wiped dry, the testicle reduced and the

skin incision closed with interrupted silkworm gut suture. The wound was covered with a piece of sterilized boric lint and dressed with sterilized per-chloride gauze with a firm double spica bandage of the perineum—"the bathing drawers bandage"—as it was termed by the late Major Moir. Such an operation for a single hydrocele, if done with regard to the time it took, would be finished in 7 minutes, from the start to finish, not including the time it took to get the patient under an anæsthetic.

The dressings were never changed till the seventh day when the wound was wiped clean with a little spirit lotion (Lotion Hydrag. Bin. Iod. 1 in 500 of rect spirit) and the stitches removed. The wound was then sealed with a little cotton wool and iodoform varnish and the patient told to stay in bed for another 24 hours, after which he was discharged from hospital. Almost all the cases with a very few rare exceptions ran this course, and every patient thus treated could get about and do his work on the 10th day if he wished too.

The time for a double hydrocele operation would necessarily be a little longer, but the period for recovery would be the same.

These are the cases with moderate sized hydroceles in which the sacs were fairly thin and smooth. In larger ones partial excisions of the sac, by pulling it off its subcutaneous tissues and then excising it, was resorted to, and this method generally gave some trouble on account of the attendant bleeding. In very big ones partial excision of the scrotum was performed, and it accounted to almost an operation for elephantiasis of scrotum. The first point to strike me was the question if we could not do away with the catgut stitch to retain the sac in its evaginated position, for to do away with the stitch was to save so much time as well as to do away with the necessity of leaving a foreign body, however aseptic and easily absorbable it might be, in the wound. It was then found that if we made the opening in the sac at the topmost part and just large enough to turn the testicle inside out, the sac when completely evaginated did not need a stitch to keep it so. This answered very satisfactorily and was always followed with the result that we never used ligatures, catgut or silk in a hydrocele operation unless absolutely necessary as in cases of persistent bleeding.

Major Moir had always impressed on me the necessity of watching the after effects of all the operations as far as feasible in order that the defects in them may be brought out and remedied in future ones, and I always requested my patients, when leaving the hospital, to come and show themselves from time to time. Thus I had many opportunities to watch these cases even after a year had passed after the operation. And as I was very much interested in the results of hydrocele operation, I was constantly on the look out for such patient.

The first patient that brought the question of skin incisions in hydrocele to my notice, was a young Marwari who had been operated on nine months previously and who came to me complaining of thickening of the scrotum. He had been operated on for double hydrocele with two lateral incisions and evaginated sacs. He was quite well for about six months, after which he noticed that the scars became slightly inflamed and thickened and the thickening tended to invade the surrounding skin. The inflammation passed off in a few days but the swellings remained and what is more was steadily growing. I promptly shewed the case to Major Moir and had him admitted into hospital again. I looked up his old history sheet and found the particulars of his operation mentioned before. He was operated on in a few days for complete excision of the scrotum and was discharged in due course. I did not see him any more, though I remained in the hospital for about 1½ years after his discharge.

Sometime after I came across two other similar cases which had similar operations done in them a few months previously, and who started thickening of the scrotum

in a similar manner. Both cases were operated on for excision of the scrotum and went out cured.

In all these three cases both the testicles with their sacs were firmly adherent to the subcutaneous tissues of the scrotum and the sacs had atrophied up to more membranous fasciae, shewing the absolute efficacy of the evagination method of operation.

But the thickening of the scrotum was a serious drawback as a result of the operation. The lateral incisions had divided the lymphatic vessels of the scrotum and thus interfered with lymphatic circulation, resulting into a spurious form of elephantiasis.

This led Major Moir to follow the mesial incision along the raphe where the vessels will be least interfered with, and this method removed as well the necessity of making two incisions in cases of double hydrocele, and thus saving more time and rendering the operation much quicker. This method answered very well for sometime, especially in cases of double hydrocele. The scar would scarcely show after a little time and there would be less chance of interfering with the lymph circulation.

After a few months, a patient, a medical man, came back to shew that he had adherence of the two testes as a result of the operation. No doubt, the mesial incision had opened up the septum and had thus brought the two surfaces of the two testes together which had formed adhesions between them.

To remedy this, in all cases in future the septum was brought over the skin incisions and fixed there by means of the same sutures, which closed up the skin. This method effectually prevented any adhesions between the testes, as I had opportunity to examine several cases, after some months had elapsed since their operation.

To sum up these, the method that was followed in my wards in cases of double hydrocele was—a mesial scrotal incision along the raphe the length of the incision depending on the size of hydrocele, separating one testicle from its surrounding tissues including the division of the ligamentum testis (this is important as without it the scrotum would have a 'tucked in appearance'), opening up the sac at the highest part with an incision just large enough to let the testicle out, evaginating the sac and dropping the testicle back into its place, treatment of the other side similarly, then closing up the wound with the septum drawn up in between the skin incisions. The whole of this should not take more than 8 or 10 minutes. As to the after result of the operation, there is very little chloroform sickness (but this depended on the idiosyncrasy of individuals) owing to the patient having taken very little chloroform, very little pain, or other constitutional symptoms, retention (reflex) of urine in rare cases no change of dressings till the 7th day when the stitches were removed. Very little swelling not more than one would expect from the size of the sac, and the position of the scar which was scarcely recognizable in a month or two, and which interfered very little with the lymphatic circulation of the scrotum.

The quickness of the operation is a very great advantage, two skin incisions would take very much longer in sewing up.

I remember Major Moir doing this operation in three cases, two double and one single, in 20 minutes, while he was operating on one, the next was being anesthetized, so that no time was lost. Major Moir was always fond of interrupted silk worm sutures which took more time in tying than the continuous suture, otherwise the time could be made even less.

Of other incisions, I have seen Major O'Kinealy doing the operation by the inguinal incision. He called me in several times to watch his operations and keep time for him. The quickest he did was a double hydrocele with two inguinal incisions for the two testes and it took him eleven minutes. He had not finished his experiments and observations when I left the College Hospital. In the last issue of the *I M G*, Dr Corrie Hudson

mentions such an incision. The greatest advantage in this incision is its situation away from the dependant parts when it could be contaminated. But it has the disadvantage of having to do two separate operations at the same time for a double hydrocele, besides leaving inguinal scars which may be mistaken for venereal buboes later.

Of the infection of the wound and change of dressings, I may mention here that if for the first 3 days the dressings are kept dry and clean by the patient, there need be no occasion to apprehend any mischief. For the first few cases I used to change the dressings as soon as I found out that the patient had soiled them, later I found out that the dressings, if superficially soiled after the 3rd day, may be left with impunity and without any apprehension, though I do not advise this as a routine method.

In one of my cases, a medical student belonging to the Military Pupil Class, the patient was up and about on the second day. He would not stay in bed a moment during the day, after our rounds were finished, but he kept his dressing in place and perfectly clean. His stitches were removed on the 6th day, on which day he went back to his quarters and joined his duties. He was under my observation for over 18 months and the result of the operation was very satisfactory.

Of the three cases I mentioned as having come back after a few months with thickened scrotum as a result of double lateral incisions, they were operated on soon after their admission, and the subcutaneous tissues presented characters of elephantiasis—oedematous blubbery mass starting from the incision scars and extending to the surrounding parts. All the three cases had been done by Pratt's method, and in all the three cases the results were very satisfactory as far as the hydrocele was concerned. The whole surface of the sac was uniformly adherent to the surrounding subcutaneous tissues, and what was more hid shrivelled up into a thin membrane what was once a thickened sac.

Another case, I remember, was one that came to have the other side operated on after about two years. The patient could not name the operator who had done the first operation, and so I could not procure the records. The first operation had been a lateral incision and most probably an evagination method as far as could be judged when exposed during the second operation by the mesial incision. This case too was perfectly satisfactory and the testicle was almost normal in size.

I come now to a series of five cases out of the total in which partial excision of the scrotum had been done with partial excision of the sac, the sacs having been large and very thick. The first of these, a school master, complained of soaked dressings behind on the 2nd day. I opened up the dressings and found the flaps of the scrotum very much swollen and distended with a point of oozing from the incision. I promptly cut open all the stitches, turned all the clot out, found a bleeding point in one of the testes, which had been excised of the sac and tied it. The rest of the wound I scrubbed gently with a coarse perchloride gauze, washed the whole wound clean, dried it and closed it as before, the wound healed by first intention. Major Moir gave me directions afterwards to treat all cases of hemorrhage similarly, which he thought was much better than chancing the prospect of a suppuration.

The rest of the cases I did similarly and all healed by first intention. Two of these cases did not shew any soiling from the dressings outside, but complained of intense tension in the wound, and knowing that there was not much tension at the time of closure, I suspected hemorrhage and proceeded as described. These five cases will shew the disadvantages of the excision method.

I would like to hear other operators experimenting on the mesial incision with the fixation of the septum afterwards and then giving their opinion of it in comparison to the other skin incision, particularly watching the after result.

SUMMARY OF 33 CASES OF HYDROCELE

By W C BENTHALL, M.B., C.M.,
Travancore

In reply to the invitation of the Editor of the *Indian Medical Gazette* of May 1907, at the conclusion of Doctor Fink's interesting paper on this subject, I submit the following analysis of 33 cases which I have operated on in the various hospitals of the "South Travancore Medical Mission" —

Number	Age	Side	Duration	Size	REMARKS
1	25		2 years	Large mangoe	Incised and drained
2	45	L	2 do	Cocoanut	Do do
3	43	R	2 do	Man's head	Local anæsthesia
4	58	R	1½ do	Cocoanut	Very thick walls
5	43		6 months	Do	Excision of sac
					Cystic degeneration of testical, and calcareous degeneration of epididymus castration
6	20	L	1 year	Mangoe	Excision of sac
7	26	L	8 years	Fætal skull	Do do
8	25	R	4 do	Mangoe	Do do
9	24	R	4½ do	Turkey egg	Do do
				Cocoanut	Stitched behind cord
10	18	L	4 months	Mangoe	Excision of sac
11	16			Turkey egg	Do do
12	31	R	9 years	Ditto	Do do
13	54	R	9 do	Man's head	Also hydrocele of cord on L side
		L	5 do	Mangoe	
		L	4 do	Together = 2 football, penis invisible	Both sides suppurated
14	21	R	3 do		Stitched behind testicle
15	38	L	4 do		Excision of sac
		R			After op pain and slight swelling, much pain in back, urine drawn for 2 days
16	22	R	2 years	Man's head	Excision of sac
		L	2 do	Mangoe, penis almost hidden	
17	12	R	6 do	Areca nut	Excision of sac
18	25	L	1½ do	Man's head	Stitched behind
19	26	L	1 do	Small cocoanut	Also circumcision and removal of Fem and Ing glands on both sides
20	18	R	3 do		Accompanied by hydrocele of cord
21	20	R	3 do	The two sides = man's head	Excision of sac
22	18	L	6 months		Do do
23	35	L	2 years	Cocoanut	There was a hernia of R. side, which was radically treated
24	42	L	6 years	Large mangoe	Castration as testicle enlarged and hard (vide infra)
25	30	R	6 do		Excision of sac
26	26	R	9 do	Fætal head	Exceptional oozing, drain inserted
		L	5 do	Tennis ball	Testis enlarged after operation
27	30	R	6 do		Excision of sac
28	27	L	1 do	Mangoe	Do do
29	25	L	2 do		Do do
		R	1 do	Small cocoanut	Do do
30	20	L	12 do	Mangoe	Do do
		R		Man's head	Do do
31	46	L			Do do
		R			Do do
32	26	L	1 year	Man's head	Do do
		R	3 months	Closed fist	Do do
33	22	R	1½ years	Cocoanut	Do do

Remarks on the series — 21 of the cases were of the *chetty* caste, and therefore well to do and comfortably living people, though not a class who usually frequent our hospitals, 6 were Brahmans, and only 6 were poor and likely to be ill nourished, 10 were double. The ages range between 12 and 53. Nineteen of the cases have been seen a year after operation and had no return of the hydrocele, and no case of recurrence has been heard of. Only 3 of them complained of severe pain after operation, and in two of them the testis had been removed. Only one case went septic and that was due to a sore on my own hand, it ultimately gave a satisfactory result. Chloroform was administered in all cases, save one done under Cocaine and Adrenalin owing to Mitral disease. In 6 cases the temperature touched 99 in the first 24 hours, in 3 cases 100, in two cases it ran up to 102 and 103, the former was the septic case, and the latter yielded to a stiff dose of quinine.

One case is worthy of special note, No 17, a girl, aged 12, where the hydrocele occurred in the right labia, pushing the vulva to the opposite side the sac was completely excised, and the labia stitched without drainage. The result gave the parts their normal appearance.

In case 24, the testicle was found enlarged and very hard, being suspicious of malignancy it was removed, a microscopical section afterwards revealed the condition to be gummatous.

In a few of the earlier cases a drain was used, but now I always stitch up with a continuous silk suture. In 3 cases only was the sac stitched behind the cord as in the cases described by Doctor Fink, and I did it then because the sac was very thick and vascular.

Technique of the operation — Shaved and cleaned overnight, chloroform usually by Junker's apparatus. Parts scrubbed with soap and water, next rubbed with ether, and then with 1-20 carbolic, finally rinsed with 1 2000 Bimodide, which last is used for the marine sponges and hands all through. The tumour is made to present tense in front by holding the posterior aspect in the left hand, and retracting the skin tightly. The incision is made down to the tunica vaginalis, and large enough for the hydrocele to present through it, being sure of dividing all the loose cellular tissue just external to it, and then with the finger of the right hand swept round both sides the hydrocele is shelled out, and by pressure backwards of the scrotal tissues with the left hand, is made to present outside the scrotum. It is then stabbed anteriorly, and the fluid allowed to escape, the edges of the stab being at once clipped and held up by artery forceps, so that the light shining through shows any important structures, as 6 of these cases showed the cord running in front of the sac, I deem this an important thing, to save the cord. Then with a pair of scissors the sac is cut right away to within ¼ inch of the testis leaving the organ with a kind of collar around it. Bleeding points are caught, and with the exception of one or two at the lowest part are easily arrested by twisting—in some very vascular cases some half dozen may need tying. The testis is then returned into the scrotum, a moment's watching to see if there is any oozing, and then the scrotal incision is run up with a blanket stitch of No 1 or 2 silk. A piece of double cyanide gauze, or simple country gauze baled with the instruments, and wrung out of 1 2000 Bimodide is applied, and a sterile sawdust bag, and a St Andrew's cross bandage very tightly applied. Although the use of a catheter is often necessary the night of the operation owing to the tightness of this bandage, I venture to think it has much to do with the prevention of any oozing (which, as far as I could ascertain, did not occur in these cases, sufficiently to be recognized either subjectively or objectively) or enlargement of the testis. Though the bandage is usually generally reapplied on the third day, the gauze dressing is undisturbed till the 7th or 8th day when the stitches are removed and the patient sent home.

I usually reckon the average time for the operation is 15 minutes, though I have done it in 6 minutes—a point which has much to recommend it when the morning's operation list is a full one

A Mirror of Hospital Practice.

OLD AND NEW TREATMENT OF "AGUE CAKES"

By J R PILLAI,

Viper Hospital, Port Blair

THE treatment that has been adopted in this hospital, for a long time for enlarged spleens, is by administering triple sulphate (quinine, iron, and mag sulph), mixture internally, and applying red ointment alternately at different places, to the size of a rupee, over the spleen and mild out-door exercise

In malarial cachectic cases, arsenic was added in the mixture as well

For convenience sake the enlarged spleens can be easily described as follows —

1 Enlarged spleens to the size of a cricket ball below the costal arch

2 Enlarged spleens to the size of a big sized cocoanut

3 Large and indurated spleens occupying a greater portion of the abdominal cavity

Cricket ball sized spleen cases under this old treatment get better on an average from 15 to 20 days, if no attacks of ague in the meantime

Cocoanut size spleen cases by the same method of treatment are discharged after 25 to 35 days stay in hospital, without fever in the meantime

Large and indurated spleen cases, with or without malarial cachexia, take a pretty long time, from 4 to 5 months, on an average to get better. Even this cure is only temporary. A few attacks of fever, bring the spleen down again, to its former enlarged state

To counteract the constipating effect of iron containing in the mixture, mag sulph is so varied according to the different constitution, that bowels made to move 2 or 3 times a day

The weight of men who have large and indurated ague cakes, goes down gradually with the diminution of the spleen. But mild cases of spleen, on the other hand, improve in weight, even with the reduction of the enlarged spleen

A few days after admission and when the attacks of fever cease, the appetite of these patients increase, and with the progress of the treatment, the red cells in the blood increase, and consequently the pale conjunctival, in cachectic cases, gradually get red

The crescents are very often seen in the blood of cachectic cases, but after continuing this old treatment for a long time, they seem to disappear

Liver, especially gets emphysematous, in many of these cachectic cases, if they do not get into the hospital soon for treatment

NEW TREATMENT

The article written by Major C A Johnston, M.B., D.P.H., I.M.S., in a previous (May 1906) issue, was so instructive and attractive to read, that an experiment was made in this hospital, on 48 cases of enlarged spleen, by injecting quinine hypodermically, administering tonic without quinine internally, and applying blisters over the spleen

The method of the treatment and its result are shown as follows —

Size of Spleen	NUMBER OF CASES UNDER	
	New treatment	Old treatment
1 Cricket ball size	6	6
2 Cocoanut size	6	6
3 Large and indurated	12	12

All these cases were treated in one ward, one row of which containing cases that got old treatment, and the other row new treatment

The deltoid areas were selected for injection and these parts were thoroughly asepticised. The needle is well boiled in oil before every injection

Neutral quinine is dissolved in well preserved rain water, boiled, and then injected once every morning, 4 grains for the first set, 5 grains for the second set, and 6 grains for the third or cachectic set

After injection, carbolic oil 1 in 40 is rubbed over the parts, and the place is fomented occasionally to relieve the pain caused by the piercing of the needle

This new treatment was started on the 13th of July 1906. The result of examination on the 20th of July 1906

The first set that got the injection treatment showed a marked improvement. Only about two fingers breadth of the spleen was palpable below the costal arch. No fever in the course of that week

Weight of the patients increased to 2 to 3 pounds, appetite fair. No crescents in the blood

Whereas in the same opposite set that got the old treatment the improvement was only slight, weight stationary, appetite moderate, attacks of fever now and then and no crescents in the blood

In the second set, the cases that got the injections, improved better than the non-injected cases, i.e., the crescents disappeared, the spleens became softer and gone down by two inches, weight increased to 1 to 2 lbs and appetite fair. No marked improvement was noticed in the opposite cases that got the old treatment

In the third set, the spleens in the injected cases became little softer, crescents disappeared and weight decreased to 2 to 3 lbs, and appetite fair

In the opposite set the improvement was nearly nothing

The result of examination on the 28th July 1906

First Set—In this the spleens gone up nearly to their former sizes and general health being fair, all the twelve cases were discharged to the convalescent gang

In the same opposite set the spleens could be palpable 2 fingers below the costal arch, appetite fair and weight increased than the previous week

Second Set—Among the injected cases, the progress was as good as that of the above set, whereas in the same opposite set, the improvement was slow.

Third Set—The injected cases made improvement nearly twice as much as the non-injected ones

The result of examination on the 5th August 1906

First Set—The remaining non-injected cases were discharged along with the injected cases of the second set

Second Set—The injected cases having gone out of the hospital, there remained then opposite sets, who were making more favourable progress than last week

Third Set—The blood of the injected cases was repeatedly examined for crescents, but to no purpose, whereas, some were seen in the blood of some of the non-injected cases

The improvement in the former was better and satisfactory than the latter cases

The result of examination on the 13th August 1906

Second Set—The spleens in the remaining non-injected cases were only palpable to two to three fingers' breadth under the arch, and to make room for others they were sent to the convalescent gang, after a stay of one full month in the hospital

Third Set—The spleens in most of these cases that are injected, were nearly reduced to two-third of their former sizes and became softer. The weight of these men, although gone down to 4 to 6 pounds, they said they felt better and took their full diet with hospital extras and digested them better than before. This injecting treatment was suspended in these cases for a week and will be continued again later on

In the opposite set the spleens became little softer and gone down only by two to three fingers' breadth from the original enlarged size

At this stage, these cases were given the benefit of quinine injection from the 14th of August 1906

REMARKS

It has become a routine treatment now in this hospital to inject every case of enlarged spleen that is admitted.

A special care was taken by me to asepticise the parts and to boil the needle well before injection, and the result was that not a single case developed abscess

No one had any attack of fever after the first quinine injection

It is practically learnt, now, from Major Johnston's treatment for enlarged spleens, that the newly and moderately enlarged spleens of malarial origin, with or without crescents in their blood, make a rapid improvement. But in the hard and indurated spleens, the recovery is very slow. The detrimental crescents are destroyed sooner than in the old treatment. The other deranged internal organs are given a stimulus to take a good turn and tone

The only difficulty in this treatment is, that the patients with large spleens are daily given the trouble of having their skin and flesh pierced with the needle

A CASE OF VIPERINE SNAKE-POISONING RECOVERY.

BY F WALL,

MAJOR, I M S

On the 23rd of August at Shillong (Khasi Hills, Assam, 4,900 feet) I arrived home at 6 P M to find my snakeman awaiting me with the report that he had been bitten in the finger whilst trying to effect the capture of a viper. He produced the snake which proved to be a pitviper (*Lachesis monticola*) common in these hills

The injury had been sustained about 4 P M

I accompanied him to the Civil Hospital walking. On examination I found the wound had been inflicted on the dorsal aspect of the second phalanx of his right middle finger. The wound had been cauterised in a very superficial and perfunctory sort of manner with nitrate of silver, and a single string ligature applied above the wrist by a native practitioner. The patient complained of much pain which he said was increasing in the hand, and I have little doubt was due mainly to the ligature. The whole limb was much swollen, and the swelling extended slightly to the subcutaneous tissues beneath the axilla. The hand was most swollen, partly doubtless due to the ligature for it was cold

I removed the ligature, made four parallel incisions to the bone, rubbed in crystals of permanganate of potash, and dressed the part

The patient walked to my house, a mile distant, where I told him to sleep in case of developments. He passed a fair night, and said he slept all right, and he seemed fairly easy in the morning, but his swelling had increased. I sent him home and told him to keep quiet

At 12-25 inclement weather having brought me home unexpectedly I found him sitting on my doorstep, his clothes saturated with blood, and his finger bleeding copiously. He had been there fifteen minutes. He must have lost at least a pint and a half of blood where he sat. The bleeding he said came on suddenly whilst he was asleep. I controlled the bleeding as best I could with improvised tourniquets, and had him taken to the Civil Hospital where I packed the wound, applied a tight bandage and gave him a hypodermic injection of Ergotin $\frac{1}{100}$ grain, and morphia sulphate $\frac{1}{4}$ grain. I ordered him adrenalin chloride grs x every hour, and calcium chloride grains xv with Ext Ergotæ Liq 3i every second hour. After 7 P.M., calcium chloride alone was given in fifteen grain doses every two hours while awake, and a generous supply of milk. He remained in hospital, and for his subsequent history I am indebted to Major D. R. Green, I.M.S., Civil Surgeon.

On admission, 24th August—Pulse 65, weak. Respiration and temperature normal. *Evening*—Pulse better, stronger, respiration normal, temperature 99° F.

August 25th—Pulse stronger, having nearly regained a normal force. Respiration and temperature normal. Passed a good night. Wound left undressed, the finger tip being worn, and sensitive. No further hæmorrhage from the finger, nor from any mucous surfaces. The urine contained no blood nor albumen. The bowels acted, and the dejecta were normal. Calcium chloride was continued as before, and he had a generous supply of milk.

August 26th—The wound was dressed. On removing the plugging some oozing recommenced, but soon ceased when rebandaged. No constitutional symptoms of any sort. Treatment as before.

August 27th—Left the hospital at his own request. On the following day some slight oozing from the wound recurred, but soon stopped. I have seen him since on several occasions, and he has had no further ill consequences.

The toxic effects were typically viperine. He never showed the least constitutional disturbance, and no nervous manifestations. His companion reported to me that he shivered immediately after his accident, but this I feel little doubt was nothing more than an emotional manifestation, for it was transient, and part of a fit of sobbing which his first alarm evoked, and there was no repetition of a similar nature. The blood was evidently profoundly altered in quality for that which was shed upon my verandah, and steps showed no trace of coagulation an hour or so afterwards.

The drugs administered internally appear to have had the desired effect of restoring coagulability, for no further hæmorrhage occurred,

though there was some tendency to a recurrence after their suspension.

I believe from statistics that not one per cent of the cases of snake-bite occurring in India ever seek advice from English practitioners, certainly not one in five of those that do bring the snake that inflicted the wound, and I would be afraid to hazard a guess at the percentage of medical men in this country who are competent to identify any snake other than perhaps the cobra, dabora, or echis.

For these reasons the case is a very important one. There is no authentic record of a bite from this snake that I can find in snake literature with a single exception reported by Stoltzka (*Journal of the Asiatic Society of Bengal*, Vol XXXIX, p. 224) who once had a cooly wounded by one. The man appears to have been only scratched, and not poisoned, for he was made to suck the wound, and imbibe brandy, and no ill effects were noticed.

The pitvipers (*Crotalinae*) as a sub-family are reputed to be but moderately poisonous, occasioning symptoms which though often severe rarely, if ever, prove fatal to adults. I can find no single authentic case of a fatality from any of the twelve species known from our Indian Dominions, and the violence of their poison is probably on a par with that of our common British viper (*Vipera berus*). This case adds confirmation to the prevalent views with regard to the toxicity of their venoms.

The offender in this instance was one foot nine inches in length, therefore a well grown adult.

A CASE OF PERFORATED TYPHOID ULCER—RECOVERY WITHOUT OPERATION

By C. I. BRIERLEY,

CAPTAIN, I.M.S.,

Agency Surgeon, Wana.

THE following interesting case occurred at the 74th Punjabi's Hospital, Saugor—

A Sikh Sepoy was admitted early in February suffering, as I then believed, from double lobar pneumonia.

The bases of both lungs were dull on percussion and tubular breathing was heard on both sides over the dull area. Temperature at this time registered 103° Pulse 110.

I placed him at once on milk diet and treated him as an ordinary case of pneumonia.

The temperature remained high, varying between 101.6 and 103 for 13 days which made me suspicious of typhoid fever, but there were no abdominal symptoms at all. The patient though had complained of headache from the start.

On the 13th day, the temperature fell to 98°, which seemed to me fairly typical of a pneumonic crisis, but to be on the safe side I kept the patient on a milk diet for the next 12 days.

During this time the patient was very weak and did not pick up at all. His muscles were flabby and the pulse remained weak and rapid. I decided to try him on a more liberal diet, and accordingly ordered a brandy and egg-flip to be given him that morning.

The following morning, the patient suddenly collapsed. His temperature which had varied between 98.8 and 97° then registered 97.2. His pulse was rapid and wiry and almost unperceptible at the wrist. Patient became restless and anxious about himself. His face was grey and ashy, and he complained of severe pain in his abdomen and of vomiting of bile-stained fluid. On examination I found that his abdomen was somewhat distended and very tender to the touch.

On percussion the whole abdomen gave a very resonant note and liver dullness was completely absent, a resonant note like that heard on percussing the stomach being given as far up as the 5th intercostal space in the mid axillary line.

I diagnosed perforated typhoid ulcer and called in Captain Reed, R.A.M.C., to assist me with the operation.

On Captain Reed's arrival one hour after this, the patient was so collapsed—the pulse being practically unperceptible at the wrist—that we decided not to operate, especially as the patient's friends were all dead against it. In fact, we thought he would die at any minute.

I told the friends that I thought there was not the least chance of his recovering.

I then gave him a brandy and saline injection into the axilla and 10 minims of strychnine hypodermically and placed hot fomentations on his abdomen and hot bottles to the feet.

In the evening of the same day, I was surprised to find the patient somewhat better. The pulse was 100, but much stronger in character, and the pain in the abdomen had almost disappeared. He was still restless and complained of vomiting, and watching which troubled him much.

The following morning I was still more surprised to find that the liver dullness was reappearing.

The pulse was then 120 and fairly strong. Patient said he felt much better but still vomited green bile.

To make a long story short the patient gradually recovered, the liver dullness completely reappearing about three days later.

Presuming that this was really a case of perforated typhoid ulcer, I can only account for the recovery on the supposition that the ulcer

must have been extremely small and had been quickly closed by lymph formation.

A case of this kind must be exceedingly rare, and I should be interested to hear if other cases of a similar type have been noted by Indian practitioners.

CELLULITIS OF FACE CAUSED BY FOREIGN BODY

By DEBENDRO NATH GUPTA, L.M.S.,

Medical Officer, Bihari Lal Mulhary Dispensary, Banchni, Hughli District

RAHIM, a Musalman male child, aged about 2½ years, was brought to Banchni dispensary on 16th January 1907, suffering from diffuse inflammation of the right half of the face. The cheek and eyelids were greatly swollen, puffy, and boggy to the touch. There was an ulcer, the size of a pin's head, discharging serous pus, over the inner canthus of the eye. On opening the lids the conjunctiva was seen to be greatly inflamed, the cornea was uniformly opaque, and there was pus in the anterior chamber. The child seemed fairly well nourished, it had suffered from occasional attacks of malarial fever, but the liver and spleen were not enlarged. The heart and lungs were healthy. The urine contained nothing abnormal.

A free incision was made in the lower lid, and a quantity of pus was let out, beneath which was some sloughy connective tissue. On removing some of these sloughs, a small foreign body was found just below the inner canthus of the eye. This proved to be a seed of *koonch* (*abrus precatorius*), the red colouring matter of which had been absorbed, while the black colour remained, so that the seed, instead of being half black and half red, was half black and half white. Apparently the child had introduced the seed into the right nostril, whence it had made its way up the lacrymal canal.

Subsequent history—A counter-opening had to be made over the temple to let out pus. The sloughs had completely disappeared, and the wound became clean, within five days. It healed by granulation within three weeks. The eye was treated with boracic and cocaine lotions, the conjunctivitis disappeared, but the cornea remained opaque, and vision was lost. Internal treatment consisted in administration of stimulants and tonics, quinine, iron, and nourishing food, under which the child rapidly regained health and strength.

Remarks—The seeds of *abrus precatorius* are used to poison cattle, a needle or thorn (sui) composed of the seed, crushed into a paste with water, being introduced under the skin, and there causing violent inflammation and death.

Indian Medical Gazette.

NOVEMBER, 1907

THE INDIAN MILITARY FAMILY PENSION FUND

ALL our readers who belong to the Indian Medical Service know this Family Pension Fund to which we and all officers of the Indian Army must subscribe as a condition of appointment, and most of us are aware of a discussion which took place some time ago in the columns of the *Pioneer* and *Truth* as to the management thereof

The fund is not managed on ordinary insurance principles, nor is any insurance fund established. The contributions are credited and the pensions charged directly to the Indian revenues as military receipts and charges. The fund is however no charge on the Indian revenues, and the rates of subscriptions, etc., are regulated from time to time by the Secretary of State.

The *Gazette of India* for 31st August contained a letter from the Secretary of State on the valuation and report on this fund made by Mr. Willis Browne, F.I.A.

It has been found that on a valuation on a basis of $4\frac{1}{2}$ per cent interest the assets of the fund have exceeded the liabilities by the enormous sum of £212,056 sterling on 31st March 1903 and by considerably more at the present time.

In spite of this enormous sum to the credit of the fund, which (we presume) represents the excess payments of subscribers in previous years, yet the subscribers are not to get any retrospective benefit out of this great excess, but from 1st September 1907 they will benefit, till next revision, by a decrease in the amount of subscriptions and donations amounting to 25 per cent. This of course is satisfactory, as far as it goes, but we believe that the large majority of the married members of the fund would have welcomed an increase in the pensions in each grade, for in our experience officers do not complain of the amount of the subscriptions, but that they and their families do not or rather are not likely to get a full insurance value for the money thus compulsorily invested. This is the burden of most men's complaint and out of the above enormous surplus something better was surely to be expected.

The following donations on marriage and on promotion to a higher class are therefore reduced by one-fourth —

	DONATION ON MARRIAGE		DONATION ON PROMOTION TO A HIGHER CLASS	
	Old	New	Old	New
	£	£	£	£
Class I Colonels and Surgeon Generals	341	288	72	54
Class II Lieut Cols	192	144	36	27
Class III Majors	96	72	24	18
Class IV Captains over six years	48	36	12	9
Class V Lieutenants and Captains under six years	24	18		

The donations payable by all classes alike on the birth of a child were formerly £15 for a son and £24 for a daughter, these are now reduced to £11 5s 0d and £18 respectively.

Again, the monthly contribution payable by each married and unmarried officer is also reduced by one-fourth, and therefore the new rates will work out as in the following table —

	MARRIED		UNMARRIED	
	Old	New	Old	New
	£ s d	£ s d	£ s d	£ s d
Class I	4 15 0	3 12 0	2 8 0	1 16 0
Class II	3 16 8	2 17 6	1 10 8	1 3 0
Class III	2 17 6	2 3 2	1 3 0	0 17 4
Class IV	1 18 4	1 8 10	0 13 4	0 10 0
Class V	0 19 2	0 14 6	0 7 8	0 5 10

Similarly, the monthly additional subscription for each son living (up to age 21) will be reduced from 1s 11d per month to 1s. 6d, and for each girl (until marriage) from 4s 10d to 3s 8d. The above tables show the substantial nature of the reductions given by the Secretary of State's letter as regards future subscriptions, with effect from 1st September 1907.

While on this subject it may be well to direct the attention of officers to another method of using this fund, that is, the provision of passage money for widows and orphans. This money which must not exceed Rs 3,000, is payable to the widow in the event of the husband's death in India—or it is payable to the officer's estate at his death. It is of advantage that it will be paid over immediately after the death is duly reported, and is therefore immediately available for the use of the widow and orphans.

This insurance may be effected by one payment or in instalments extending over four years bearing, of course, interest on arrears at $3\frac{1}{2}$ per cent. On retirement the surrender value of this insurance can be taken or it may be left to form part of the officer's estate on decease. We think it well worth the attention of officers, *eg.*, an officer aged 25 can for Rs 366 assure Rs 1,000 at death, at age of 30, it will cost Rs 393, at 35 years, Rs 426, at 40 years, Rs 463, at 45 years, Rs 507, and at 50 years, Rs 555, again, the surrender value at the age of 55 years (say on retirement) is Rs 591 or 1,000 if it remains till decease.

Current Topics.

THE OUTBREAK OF DROPSY IN THE DARJEELING TEA GARDENS

DURING the month of September the attention of medical men in Darjeeling and Kurseong was attracted to a series of cases, several of which were fatal, occurring especially among the tea garden labourers. The symptoms were an acute dropsical condition of the feet and legs, and pain and disturbed action of the heart. In one case which we saw in the Darjeeling Hospital the symptoms were very like those of beri-beri except that instead of loss of reflexes there were exaggerated knee jerks and ankle-clonus.

The letter we publish from Dr Pal, a retired Medical Officer practising at Kurseong, shows that the disease is prevalent in that station among natives of the place. Dr Seal and Dr. Humphreys who have great experience among tea garden labourers, have both seen many cases, and we understand that Captain Munro, I.M.S., the Deputy Sanitary Commissioner, has gone out among the hills to investigate the cases. We have also heard of an epidemic of dropsy in the Jail at Comilla, and Capt S. Anderson, I.M.S., the Superintendent, considers it to be a recurrence of the epidemic dropsy which appeared in a widespread epidemic in Bengal and Assam in 1877*.

The most complete account of that curious epidemic of dropsy will be found in the new volume of Allbutt's *System* (Vol II, Part 2, p 643), in which Colonel Kenneth Macleod gives a complete account of the prevalence of the disease and a résumé of its literature.

It may be worth noting that in many of the tea gardens the labourers were using Rangoon rice and a connection between beri-beri and rice seems inevitable. Till the matter is further investigated it is impossible to say if this is an outbreak of epidemic dropsy or of beri-beri, but

unless there are two coincident epidemics our opinion is that the disease in the tea gardens is beri-beri.

SEA SICKNESS

MUCH has been written on the cause and cure of this most unpleasant malady, and hitherto the result has been to leave most of us in a fog as to the exact pathology of the ailment. It so happens that before us lie two articles on the subject, one by Dr K. F. Lund, in the August *Practitioner* and the other a small treatise* on the subject by Dr Norman Barnett. Amid the many theories about this disease it is interesting to find two independent writers arriving at the same conclusions, *viz.*, that the *fons et origo mali* is in the disturbance of the endo-lymph circulation in the semi-circular canals.

Dr Barnett begins by making a protest against the still too common practice of shipping off persons in an advanced stage of disease to sea. When we remember that even for healthy persons an unaccustomed sea-voyage may not be all pleasure, how much more so for a sick man in a small crowded cabin and with difficulties about food, nursing, etc. Dr Barnett also points out that sickness produced in a person whose digestive organs are at fault is not true sea-sickness, he calls it rather sickness at sea.

The predisposing causes are those connected with the stomach, the liver, the nervous system, fear, association of ideas, nervous anticipation, and the motion of the ship.

A large number of writers have associated sea-sickness with the sense of sight, but as Dr Lund points out "blindness is no panacea for sea-sickness."

Both Dr Barnett and Dr Lund then go on to show that the many phenomena of sea-sickness are connected with the sense of equilibrium, that is, with the fluid in the semi-circular canals of the internal ear, and the true cause is the irritation of the terminal fibres of the auditory nerve, this irritation being caused by the motion of the ship, or other similar motion (as for example, we have seen "sea-sickness" occur in the journey down from Darjeeling in the hill railway especially before the days of the new bogie carriages). This irritation is conveyed to the vagus and possibly the sympathetic nerves and thus to the walls of the stomach. Dr Lund points out that in 1889 a party of 25 deaf-mutes crossed the Atlantic to attend a Deaf-mute Congress at Paris, the voyage was very rough and "every passenger except the deaf-mutes and one deaf lady passenger was ill."

Another proof is the efficacy of the bromides if properly administered.

* See *I. M. G.* *passim* for years 1878, 1879, 1880 and 1881, and for a more recent outbreak, *I. M. G.*, July 1902 and March 1903. A similar outbreak is reported in the Alipore Reformatory, Calcutta, October 1907.

* Sea sickness, its true cause and cure by H. Norman Barnett F.R.C.S. late Surgeon P & O Co, London. Baillière, Tindall & Cox, 1907, price, 1s 6d.

Dr Barnett has a very interesting chapter on treatment, he points out the need of correcting any gastric catarrh, or state of atonic dyspepsia.

For healthy persons he begins by regulating the meals and forbidding heavy and rich foods, he gives calomel (2 grs) followed by a Seidlitz powder two nights before. The night before embarking he gives 30 grains of bromide of potassium and follows on the morning of starting with a bromide mixture of the three bromides to be taken every four hours for at least two days or four days if the weather is bad. "By that time" (he writes), "the nerve endings and the endolymph will have become used to the motion, and sea-sickness in about 95 per cent. of cases will not occur."

For short voyages (channel crossings) for those in ordinary health, he gives 30 grains of bromide one hour before embarking, and if the voyage is by night, the patient should turn in immediately.

We recommend this practical little book to medical men in India. Its cost is only 1s 6d and it will help them in cases where they are often called to advise.

THE BOMBAY BACTERIOLOGICAL LABORATORY REPORT, 1906

THIS report (for the nine months ending 31st December 1906) is always one of great interest and value, and in our issue for February last we showed the great value of inoculation as the one great and sure protection against plague once the disease has started in any place.

We have again referred to its value in our last issue, and therefore need do no more than again refer the sceptic to the fund of facts and observations given by Lieutenant-Colonel Bannerman in this report.

Since 21st June 1906, this well-known Laboratory has been known as the Bombay Bacteriological Laboratory, as it is now Provincial Laboratory for that Presidency.

We are glad to see that the Government of Bombay is on the alert to prevent a possible introduction of sleeping sickness from the not far distant East Coast of Africa, an examination of all biting flies having been undertaken.

We note that great use is being made of this Laboratory by practising medical men and 358 samples of blood were examined with the following results—typhoid 262 examined, of which only 18 gave positive results (what were the remaining cases we wonder), paratyphoid 79 cases examined and it is worth noting that 15 gave a positive reaction, of 17 cases examined for supposed Malta fever only one gave a positive reaction—the case being that of a sepoy of 12th Pioneer at Jhansi. Blood smears on slides were examined, 131, and in 9 cases only were malarial parasites found, 4 of which were malignant and 5 being tertian cases. In ten slides the "spirillum of relapsing fever" was found.

Snakes to the number of 371 (of which 328 were Echis, 13 Cobras, and 14 Russell's viper, 1 Bungarus Coeruleus) were received and venom collected and sent to the Kasauli Laboratory. Lieutenant-Colonel Bannerman gives the following note on a case of snake-bite—

"Last year I had to report a case of snake bite by a Russell's viper, which was treated with specific antivenom and recovered. Another victim this year was likewise similarly treated with equally good results. No constitutional symptoms supervened, but the man lost his finger on account of gangrene. The back of the hand also became oedematous, and on incision gave vent to nasty evil smelling serous fluid. The antivenom had evidently not been powerful enough to counteract the local action of the venom in either of these cases."

An interesting appendix by Captain F Percival Mackie, M.D., F.R.C.S., I.M.S., gives an account of an investigation into an outbreak of Infantile Diarrhoea in the Cama Hospital. A large number of organisms were isolated, showing that none of them can yet be certainly associated with infantile diarrhoea. Captain Mackie also gives two notes on spirillum fever, and the conclusions of a Committee appointed to report on an epidemic of relapsing fever among the superior staff of the Motilal Hospital, Bombay, is here quoted—

The problem before the Committee was to show how it happened that a hospital which only received a few cases of Relapsing Fever amongst the patients should show a series of cases of this fever of such severity and in so short a time amongst the superior staff. The other two hospitals which were used for comparison, were both inferior in modern equipment and general sanitary condition and yet one, the Jambhjee Jeejeebhoy Hospital to which are admitted many cases of Relapsing Fever, showed no cases amongst either the menial or superior staff, and the other, specially set apart for Relapsing Fever in all its stages, showed only occasional attacks and then only amongst its menial staff.

The natural method of transmission of Relapsing Fever has been sought often, but never proved. As before stated, a blood sucking parasite has been suspected for years and the proof that African Spirillar Fever is transmitted by the bite of infected ticks has given great support to this theory.

The spirillum is known to exist only in the blood of the infected patient and only during the febrile stage. It is possible that it may exist in some discharge or secretions, but though many observers have paid attention to this point, it has never been proved. Hemorrhages occasionally take place from the stomach (Vandyke Carter) and bowel, and it is probable that the sweepers [of the Arthur Road Infectious Diseases Hospital] mentioned by Dr Chokey became infected in that way.

In short, all the evidence goes to show that the *Spirillum obermeieri* is a true blood parasite and that the method of its transmission is by blood to blood infection. When this theory is applied to the particular epidemic under the notice of the Committee, it receives striking confirmation and makes the conclusion almost irresistible. The only factor in which these three hospitals differ is that in the Motilal the superior staff are brought into frequent contact with fresh blood. Women come to the hospital during the height of fever with active spirilla in the blood, and this infective blood is escaping from the uterus as a result of abortion or miscarriage, brought about by the poison of Relapsing Fever itself.

Treatment has to be carried out at once by the superior staff, and it is in this way that the disease has

been contracted by some of them. The history of some of these attacked points strongly to the fact that the performance of some one operation on an infected woman was quickly followed by the appearance of the disease. The spirillum is likewise known to be present in placental blood.

In the Jamssetji Jeejeebhoy Hospital many patients with Relapsing Fever are admitted, but when on the surgical side as long as they have fever (i.e., as long as the blood is infective) they are not operated upon, and in the medical wards, as also in the Arthur Road Hospital, fresh blood is never or rarely encountered.

The Committee do not maintain that this is the natural method of transmission nor even that it is a frequent one, but are strongly of opinion that in this particular epidemic it was the responsible method.

[The other members of Committee were Colonel Dyson, I.M.S., and Major T. Jackson, I.M.S.]

YAWS AND SYPHILIS

THE theory of the supposed identity of these two diseases will, we think, receive its death-blow from the paper published by Dr Aldo Castellani of Colombo in the July number of the *Journal of Hygiene*. It is well known that almost no medical men acquainted with yaws in its tropical homes ever believed in the theory of its identity with syphilis, though this was supported by many ingenious arguments by Mr Jonathan Hutchinson. The recent discovery of a spirochæte in both syphilis and yaws looked as if there was after all good grounds for this theory, but while syphilis seems to be due to the *spirochæta pallida*, it is the *spirochæta pertenues*, which has been found in cases of yaws.

Dr Castellani gives a large number of experiments, but we can only quote the summary of his article which is of special interest too in connection with the recent inoculation of a chimpanzee by Professor Günbaum of Leeds University with a primary hard chancre, which was followed by a genuine syphilitic rash and later fits of epilepsy, and the *sp. pallida* was found in the blood and organs.

Dr Castellani's conclusions are as follows:—

1 Monkeys are susceptible to yaws. The skin eruption in *Semopithecus prunus*, and *macacus pileatus* is, as a rule, confined to the seat of inoculation, but the infection is general and *sp. pertenues* is found in the spleen and lymphatic glands.

2 Material obtained from yaws patients and apparently containing only *sp. pertenues* only is infective to monkeys.

3 When *sp. pertenues* is removed from this matter by filtration, the latter becomes inert.

4 The inoculation of blood from the general circulation and blood taken from the spleen of yaws patients into monkeys may give positive results.

5 The inoculation of the cerebrospinal fluid of yaws patients gives negative results.

6 Monkeys successfully inoculated with yaws do not become immune for syphilis.

7 Monkeys successfully inoculated with syphilis do not become immune for yaws.

8 Yaws is generally conveyed by actual contact, but under certain circumstances it may be conveyed by flies and possibly by other insects.

CASSIA BEAREANA IN BLACK WATER FEVER

THE treatment of the formidable disease or complication known as black-water fever, or hæmoglobinuria, is a difficult one, and the more so the more one inclines to the quinine theory as one of the factors in its origin. There is no doubt that the administration of quinine sulphate* does lower the hæmolytic point of the blood, and this with the other factors precipitates the attack of hæmoglobinuria. Dr Stephens in his article in Allbutt's *System* (Part II, Vol 2, p 300) recommends us "to refrain from quinine (in the treatment of black-water cases) unless the parasitic infection be a massive one and to begin with small doses of quinine 'during convalescence' to free the system from the malarial infection." He also mentions the use of bicarbonate of soda (10 grains) with perchloride of mercury (m xxx) in each dose. Attention to the bowels is needed and calomel and jalap are usually found useful. Boracic acid has been recommended, but Stephens concludes that "no drug can be said to possess specific value."

On the other hand, this claim has been put forward for the use of *Cassia Beareana*, and its use has been recommended in the lay press.

We have recently come across a paper recommending this drug (*Transvaal Medical Journal*, July 1907). Dr L. Bostock, the District Surgeon of Komatipoort, reports eight cases and says that "the results obtained have been so satisfactory that he feels justified in reporting them. They all recovered without a single bad symptom from the moment they took their first dose of *Cassia Beareana*, and on the average they did better and recovered more quickly than any cases I had previously treated without this drug. In several cases the temperature dropped and urine cleared so markedly within 24 hours that the case was practically cured and recovery certain within that short period. No quinine or other anti-malarial drug was given."

Dr Bostock's method of treatment is as follows:—

- (1) Relieve headache, etc.
- (2) Fomentations to the back.

* It is possible (and there is some evidence for the view) that other preparations of quinine have a lesser power of reducing the hæmolytic point, if so, they would be preferably used in these cases.

(3) Free action of bowels, calomel, followed by salines and cascara

(4) Promote perspiration by hot tea (*avoiding phenacetin, etc*)

(5) Fluid nourishment, rectal, if necessary

(6) To give one fluid drachm of extract of *Cass. Beareana* every two hours until some improvement is manifest, and afterwards in less frequent doses. Dr Bostock gives notes and charts of four average cases

The preparation of *Cassia Beareana* used was the fluid extract, made by Messrs J Christy & Co, of London

We understand that this drug has been used largely by medical men in the Duars, and the general impression seems to be that it is not of great value in the very bad cases, and many of the milder cases recover under ordinary treatment

THE SOUTH INDIAN BRANCH, B. M. A.

WE have recently received the *Transactions* of the South Indian Branch of the British Medical Association and are glad to see it in such a flourishing condition

The first paper, in Vol. XV, No. 2, is by Capt. W. S. Patton, I.M.S. It traces the history of the origin and spread of *Kala Azar*, following the report by Major L. Rogers, I.M.S., on the connection between the "Buidwan fever" epidemic of the seventies, and the epidemic recognized for the past quarter of a century as *Kala Azar*, which by the identification of *Kala Azar* with Leishman-Donovan infection seems at last destined to yield up its long hidden secret

The next paper by Capt. S. R. Christophers, I.M.S., we publish *in extenso* in another column

The Professor of Surgery, Maj. P. C. Gabbett, I.M.S., read a valuable note on the bacteriology of the air in the operation theatre of the General Hospital. We quote as follows —

"Dr Chandrasekar was good enough to visit the theatre on several occasions and expose a number of dishes for five minutes in various situations and under various conditions. The results are, I am afraid, valueless for the purposes of comparison one with the other, since they were taken on different days, but taken by themselves, the following results are worthy of comment —

(1) In no case did five minutes' exposure give a result of less than twenty colonies and in several exposures the colonies were "innumerable"

(2) On one morning out of thirteen plates exposed, eleven showed on cultivation "innumerable colonies." On enquiry it was found there had been a night operation

(3) The colonies consisted of "sarcinæ, staphylococci, micrococci of different kinds,

fungus spores, moulds—a long thin bacillus not identified, and a spore-bearing bacillus not identified"

The practical deduction is the avoidance of dust-traps, not forgetting the electric fans, and the importance of the surgeon, nurses and assistants wearing rubber shoes, sterilized overalls and caps" (See also letter in correspondence columns, p. 436)

Major C. L. Williams, I.M.S., read a paper on a suppurating fibroid, and Capt. Rai described a very interesting case of extra-uterine gestation.

Major Elliot, I.M.S., had an interesting paper on certain forms of headache which we publish in full, and another article by Mr. E. Thurston is on the colour vision and visual acuity of some natives of Southern India. Mr. Thurston examined natives of nine different classes, and concludes that the "Jungle classes as regards ordinary visual acuity have no advantage over the more highly civilized classes"

Major G. G. Giffard, I.M.S., read an important note on his experience (in 150 cases) of Ethyl Chloride as an anæsthetic for short operations. He is not convinced that it is entirely without danger and has had some "unpleasant results almost amounting to accidents"

THE FILARIA PHILIPPENSIS AND THE MOSQUITO.

IN the March 1907 issue of the *Philippine Journal of Science* there is an article by Drs. P. M. Ashburn and C. F. Craig, on the development of the *Filaria Philippensis* in the mosquito

This filaria is claimed to be a new species; it presents no periodicity, it occurs in equal but small numbers at all hours of the night and day in some natives of the Philippine Islands. It is very motile, and it has a sheath

Both the lashing and progressive movement of this filaria while still enclosed in its sheath is characteristic. An interesting part of this article is devoted to the development of *Filaria Philippensis* in mosquitoes; it is probable (our authors say) that it does not develop in *Stegomyia*, but in *Culex fatigans* they have "been able to trace the complete development of the filaria up to the time that it becomes lodged in the mosquito's labium and is ready to infect the next person bitten by the insect."

Our authors found that in the blood from the stomach of a mosquito which has recently bitten, there will almost always be found 40 to 80 filaria, and they make the interesting suggestion that this observation may have a practical value in examining cases of suspected filariasis, for in such cases, instead of examining a blood smear from the patient, we might let a mosquito draw the blood and then examine the drawn blood in the mosquito's stomach.

The following table is worth quoting *in extenso* as it sums up the differential features between the known filariæ as they occur in the blood of man —

1905, there were 152 cases, of which no less than 83 died (54 per cent) and 49 were invalided out of the army, and Davidson (*Albutt's System*, Vol II, pt 2, p 603), quotes 286 deaths out of

Name	Central viscus	Posterior spot	Movement	Periodicity	Adult	Length	Breadth	Sheath	Head	Tail	Anterior spot
<i>F. philippinensis</i> sp nov	A spiral tube or cylinder	Present, also a papilla	Lashing and progressive	None	Not found	mm 0.32	mm 0.0065	Present tight	Serrated retractile band and spicule	Pointed, abruptly attenuated	Present
<i>F. nocturna</i> Manson	Granular mass	Present	Lashing	Nocturnal	<i>F. bancrofti</i>	0.30	0.0075	Present, loose	Six lips	Pointed	Do
<i>F. diurna</i> Manson	Absent	do	do	Diurnal	Not found	0.30	0.0075	do	do	do	Do
<i>F. persiana</i> Manson	do	Absent	Lashing and progressive	None	<i>F. persiana</i>	0.20	0.0045	Absent	Retractable fang	Blunt	Do
<i>F. demarquayi</i> Manson	(?)	(?)	Progressive	do	<i>F. demarquayi</i>	0.20	0.005	do	Spine	Pointed	Do
<i>F. ozzardi</i> Manson	Absent	Absent	do	do	<i>F. ozzardi</i>	0.21	0.0051	do	(?)	do	Absent
<i>F. magalhães</i> R. Blanchard	do	do	(?)	(?)	<i>F. magalhães</i>	0.33	0.005	do	Unarmed	do	Do
<i>F. volvolus</i> Leuckart	do	do	(?)	(?)	<i>F. volvolus</i>	0.30	0.005	do	Rounded	do	Present
<i>F. taniguchi</i> Tan	Granular streak from mouth to tail	do	Progressive	None	<i>F. taniguchi</i>	0.295	0.007	do	Blunt	do	Absent
<i>F. (Tanaguchi)</i>	Absent	do	Lashing	(?)	Not found	0.164	0.008	Present	do	Conical	Do
<i>F. gigas</i> Prout	(?)	(?)	(?)	(?)	Do	Much longer and thicker than any of the above		Absent	(?)	Blunt	(?)

Dis Asburn and Craig give the following summary —

"Briefly summarized, the history of the development of *Filaria philippinensis* within the mosquito, *Culex fatigans* Wied, is as follows. In from fourteen to fifteen days the development is complete and the filaria has passed into the labium of the mosquito, the sheath of the embryo is lost in the stomach, and the worm then penetrates the stomach wall and reaches the muscles of the thorax where most of the developmental changes occur, during this period of time the filaria has increased in length from 0.32 millimeter to as much as 2.20 millimeters, and in breadth from 0.0065 to 0.02 millimeter, it has developed a well marked intestinal canal, divided into oesophagus and intestine, a well defined anus and three papillæ which are situated at the end of the tail, the mouth appears to be simply a circular cavity having no distinct lips. Development so far as the morphology of the worm indicates appears to be complete at about the eleventh day, the only changes occurring after that being a lengthening and narrowing of the filaria, which enables it to enter the labium of the mosquito."

THE DIAGNOSIS OF LIVER ABSCESS

It is a somewhat unsatisfactory fact that the death-rate from abscess of the liver is very high, from about 40 to 50 per cent of cases admitted to hospitals in India. This is, of course, very largely due to the fact that many cases do not seek hospital till the abscess is far advanced or has burst into some neighbouring cavity. Even in the European army in India where one would expect that cases were early diagnosed and promptly treated, we notice that in the year

522 admissions in the army, which gives the same percentage 54.

That this is partly due to the known difficulty of the diagnosis in the early stages of suppuration we believe, hence it is a matter of great importance to use all the aids possible to ensure an early diagnosis, and Leonard Rogers has for some years past been preaching the importance of hyperleucocytosis as an indication of suppuration. The following note which appeared in the *Centralblatt für innere Med.*, 30th March (translated in *Medical Chronicle*, August 1907), is therefore of interest —

"In spite of antiseptics and well developed technique the mortality after operation for tropical abscess of the liver is very high (40—50 per cent) the reason being that on account of the difficulty of diagnosis surgical interference as a rule comes too late. To make a diagnosis with more certainty and early enough, Dr Axis looks for changes in the blood and metabolism, and makes out three important points —

1 Dr E Axis confirms the occurrence of a hyperleucocytosis, already observed by Bonnet and Strauss (and others)

2 He found that, as often in other liver diseases, the NH_3 of the urine is increased relatively to the total amount of N, whereas the urea is diminished. In fever there is also found an increase of NH_3 , but here at the same time the output of N is by far the greater than the intake whereas in liver abscess there is a closer correspondence between N intake and N output. Again, the urea in liver abscess cases is not only relatively but also absolutely diminished, whereas in fever there is an absolute increase of urea, thus, the author con-

cludes, if we find in a feverish disease an increase of NH_3 ($\frac{\text{NH}_3}{\text{N}}$ at least as much as 10—15 per cent of the whole N) and the excess of N excreted over intake does not correspond to the NH_3 increase, and if at the same time urea is absolutely and relatively diminished, we are justified in diagnosing an anatomical lesion of the liver

3 The author uses the fact that in even slight pathological changes of the liver an alimentary glycosuria may occur, for diagnosing a liver abscess. But some times even in persons with a healthy liver alimentary glycosuria can be produced with greater doses of laevulose. In liver abscess however, the doses of laevulose may be very small and the glycosuria very marked. The author thinks that the occurrence of sugar in the urine after having taken about one drachm of laevulose is pathognomonic of a severe lesion in the liver

The triad of (1) hyperleucocytosis, (2) increased NH_3 , and diminished urea and (3) alimentary glycosuria is, in the author's opinion, a very valuable symptom complex, when with the usual physical methods a diagnosis cannot be arrived at, and if on repeated examination this triad is always present and perhaps no other symptom besides pyrexia, the author thinks that an exploratory operation is justified

A report of six cases observed by the author confirms this statement"

THE LIVERPOOL SCHOOL OF TROPICAL MEDICINE

THE School is affiliated with the University of Liverpool and the Royal Southern Hospital of Liverpool. Three courses of Instruction are given every year, commencing on January 14, May 1, and October 1, and lasting for the academical term of about ten weeks. Each Course consists (1) of a systematic series of lectures on Tropical Medicine and Sanitation delivered by the Professor of Tropical Medicine, at the University, (2) of additional lectures on Cytology, Special African Diseases and Special Indian Diseases, delivered at the University, (3) of systematic lectures and demonstrations on Tropical Pathology, Parasitology and Bacteriology by the Walter Myers' Lecturer, at the University, (4) of similar instruction on Medical Entomology by the Lecturer on Economic Entomology, at the University, and (5) of clinical lectures and demonstrations delivered at the Royal Southern Hospital by the Physician in charge of the Tropical Ward, the Professor, and the Walter Myers' Lecturer. The instruction given occupies six hours a day for five days a week during the term. Teaching under headings 3 and 4 above is delivered in the Laboratory of the School at the University, which contains accommodation for thirty students with all necessary appurtenances, including a well-equipped Museum, a Class Library, and access to the General Departmental Library. Teaching under heading 5 is given in the Tropical Ward and the attached Clinical Laboratories of the Royal Southern Hospital on two or three afternoons a week.

At the end of each term an examination is held by the University for its Diploma of Tropical Medicine (D T M), which is open only to those who have been through the course

of instruction of the School. The examiners are the External Examiner for the Diploma, and Internal Examiners, who are also members of the staff of the School. The examination lasts three days, and consists (1) of three papers on Tropical Medicine, Tropical Pathology, and Tropical Sanitation and Entomology respectively, (2) of a Clinical Examination, and (3) of an Oral Examination. The results are declared as soon as possible afterwards. Those who do not wish to undertake the examination are given a certificate of attendance, if their attendance has been satisfactory.

Accommodation for a limited number of students may be had at the Hall of Residence (for terms apply to the Warden, 44, Upper Parliament Street).

The fee for the full Course of Instruction is Ten Guineas, with an extra charge of Ten Shillings for the use of a Microscope, if required. The fee for the Examination is Five Guineas. Applications should be made to the Dean of the Medical Faculty, University of Liverpool, from whom prospectuses may be obtained.

Two University Fellowships of £100 a year each are open to students of the School, amongst others. Accommodation for Research Work is to be had, both at the University Laboratory of the School, and at its Research Laboratories at Runcorn (sixteen miles distant from Liverpool).

THE SEWAGE PROBLEM IN 1907

MAJOR J CHAYTOR WHITE, M.D., D.P.H., I.M.S., Deputy Sanitary Commissioner, U.P., and now Chief Plague Officer, has published an interesting report on the eternal subject of sewage disposal, as a result of his special duty in England last year. We quote the following extracts from this report —

"As regard hydrolytic (septic) tanks in England many varieties exist of open and closed. Some are (as at Hampton on Thames) composed of a primary tank communicating with a series of hydrolysing chambers with upward passage through brick rubble. Tanks of larger capacity than that which equals one-fifth of the daily dry weather flow are not now usually constructed, and if the capacity is equal to twelve hours' flow, it is usually sufficient. At Chester and Salford "roughing beds" are used in combination with open sedimentation and precipitation tanks, but the ordinary plain hydrolytic tank with a sloping floor, sludging valves and a covered in roof is most suitable to India as ventilation of the tank and avoidance of offensive odours can easily be arranged for. At Benares (Chowka Ghat) Mr Lane Brown has erected an admirable installation in direct connexion with a public latrine of forty eight seats. The latrine is over the tank and hydrolytic action is so very rapid that after about six hours' actual holding up, the sewage is let out on to the contact or sprinkler bed, both of which exist side by side. The effluent is a very good one and no nuisance is complained of. For India probably the best installation that can be devised for domestic sewage is one that combines a covered hydrolytic tank and sprinkler bed, the effluent from which should be submitted to further treatment over land or, if outflow is direct into a river, to a secondary fine filter bed. In many cases this, however, will be found unnecessary. In lieu of sprays

or sprinklers double contact may be installed, in which case probably secondary treatment over land will not be necessary. There is a great deal to be said for double contact in India. With eight or ten hours in a hydrolytic tank and double contact a very fine effluent can be produced from domestic sewage. It was found in Lucknow where strong sullage was treated, that the effluent from the double contact beds was very good and did not putrefy on keeping. Double contact is also easy to work by Natives.

Treatment of the effluent by chloride of lime to sterilize it has been used in Calcutta, where the outfall is direct into the Hughli, but if even a small amount of land can be procured, this is unnecessary. It is quite possible to obtain a good, clear, non putrefying effluent without secondary land treatment, but owing to pathogenic bacteria being so common in domestic sewage, it is desirable in India to pass the effluent over the land before discharge into rivers.

In the tropics the difficulties sanitary engineers have to contend with owing to climatic conditions are so great that it is only after considerable experience that a really satisfactory scheme can be evolved. Precipitants are out of the question, and the fall in most cases is so small that very little head can be obtained for flow filters of the sprinkler or jet types. In Lucknow, where sullage as distinct from sewage is being successfully treated, there exist side by side contact beds, a revolving Fiddian sprinkler and fixed jets on beds. The sullage has an enormous amount of suspended solids, while the free ammonia and the total organic nitrogen far exceed anything found in domestic sewage at home. The amount of water used in Lucknow amounts to 7 gallons per head, but much of this is lost by evaporation and percolation so that the sullage is very concentrated. On the other hand, owing to the heat, putrefactive changes occur very quickly in India with a rapid evolution of offensive gases, so that open biological tanks are apt to constitute a nuisance. In India, wherever a sewage system exists, the hydrolytic action in the sewers is probably greater than in England owing to the high temperature and increased putrefactive changes.

KOBLER relates in *Zeit fur Klin Med*, Berlin (p 1828), the history of a family in which several cases of a severe intestinal affection simulating cholera were observed. Two persons died in two and seven days, and the others were very sick, with bloody stools, etc. The family had just come from a cholera-infected district, and examination of the blood revealed malarial germs, and the other patients all recovered promptly under quinine. These cases resemble the well-known algid attacks of malaria, which were especially common at one time in Peshawar. The pathology of this form of malaria has not been sufficiently worked out.

WE are glad to see the splendid response made by all communities in Burma to the scheme for a Pasteur Institute for that Province. The generosity of Mr S Oppenheimer who gave Rs 25,000 set it well a-going, and at a meeting on September 19th in Rangoon, at which the Lieutenant-Governor presided, and Colonel King, CIE, IMS, gave an interesting address, no less than Rs 77,000 were subscribed. The institute will not only be available for the treatment of

cases of rabid dog-bite, but will be a bacteriological institute for the whole province.

WE quote the following rather good example of what can be done by watchfulness and resource in the prevention of malaria, from the editorial columns of the *Journal A M A* —

"At the beginning of March, as during the preceding weeks, an average of five cases of malaria a week were reported at Forty Mile Camp in the Pedro Miguel, where the average population is something under 750. About the middle of March, however, the number of reported cases of malaria increased suddenly to twenty in the week. The conclusion was at once reached that there was some collection of stagnant water in the neighbourhood which was breeding mosquitoes of the anopheles type and which needed looking after. After a few days, the inspector found what he was looking for in the shape of an old scow left over from the days of the French in Panama and which had been completely overgrown by the tropical forests in its neighbourhood and so had escaped notice. This was at once emptied of water, and the larvae of the mosquitoes destroyed. At the end of three weeks the number of reported cases dropped again to less than five, and the mosquito theory as the sole source of malaria and its possibilities in modern sanitation was once more vindicated, while another lesson in disease prophylaxis had been quietly given to the world."

Reviews

Manual of Surgery — By ALEXIS THOMSON, FRCS, ED, Assistant Surgeon, Edinburgh Royal Infirmary, and ALEXANDER MILES, FRCS, ED, Assistant Surgeon, Edinburgh Royal Infirmary. Second Edition, Revised and Enlarged. Published by YOUNG, PENTLAND, 1907.

WE have received the Second Volume of the *Manual of Surgery* by Messrs Thomson and Miles, which deals with Regional Surgery. It contains 784 pages and is of convenient size and well illustrated, and moreover deserves the name of Manual. In the main the subject-matter is excellent. The surgery of each region is preceded by a résumé in small type of the surgical anatomy involved, and in this way a considerable saving in space is effected. The information supplied is well systematized and up to date. The authors, however, may note that the use of the elastic cord in the operation for the removal of the elephantoid scrotum, has been generally given up by those surgeons who have command of a good supply of pressure forceps. It has been found that there is a liability to a good deal of subsequent oozing when the cord is used. Also in scrotal tumours with a large amount of fibrous tissue in their bases, it is not always easy to completely shut off the circulation. The use of forceps has neither of these disadvantages.

The book may be cordially recommended to those who wish a modern guide to Regional Surgery of a convenient size.

Rational and Effective Treatment of Hip Disease—By P. BRUCE BENNIE, M.A., M.D., B.S., Melbourne, Honorary Medical Officer, Melbourne Hospital for Sick Children. Compiled by ALEXANDER B. BENNIE, M.A., M.B., B.S., Melbourne. Publishers: Messrs. BAILLIÈRE, TINDALL & CO.

THE effective treatment of Hip Disease by Bennie may well be called the apotheosis of 'Thomas' splint, for has not the author discovered that it is well to fit it by the formula

$$\sin \theta = \frac{\cos \alpha \sin \beta}{\sqrt{1 - \cos^2 \alpha + \cos^2 \beta}}$$

and another longer proposition which, however, is said to be more convenient for calculation. This fact provides a crumb of comfort for those whose education has been mainly classical.

The author talks much sound sense about the use of Thomas' splint. He is an ardent advocate for the claims of conservative surgery against those of operative interference, and in this he will have the sympathy of many. The author modestly claims only to have followed Thomas' teaching, and to have extended his teaching. We may, however, relieve him of the responsibility of having introduced lead strips with which to record the curves of the back and hip, which we understand him to claim. This method has been in use for over 20 years. Pewter gas piping is better for the purpose than strips of lead, as it is not so liable to distortion by its own weight. Thomas' splint is so often mis-made, mis-applied and mis-used, that this little book will no doubt be of great use to those who have to deal with many cases of hip disease; the author should have his due meed of praise for his efforts to deal with the curvatures in a methodical and scientific manner.

A Handbook of Skin Diseases and their Treatment—By ARTHUR WHITEFIELD, M.D. (LOND.), F.R.C.P. Published by EDWARD ARNOLD, pp. 320, Illustrations 50.

THE author has intended to write a concise book suited to the needs of the student and general practitioner, and is to be congratulated on having entirely fulfilled his self-appointed task. A special feature is made of the treatment of skin diseases and this part of the subject is throughout kept in the foreground. In particular the results of a systematic application of Sir A. E. Wright's methods are, the author claims for the first time, given a place in a book on skin diseases. The uses of X-rays in treatment are duly noted in the proper places, and rapid methods of examining pus, scales, etc., methods which the author has found very valuable, are given a prominent place in the pages. The book is a very good one, and can be thoroughly recommended as just the thing for the general practitioner. The illustrations are unusually successful and give a particularly good idea of the lesions they portray, and the printing and binding are excellent.

What to do in Cases of Poisoning.—Tenth Edition. By WILLIAM MURRELL, M.D., F.R.C.P., pp. 288, royal 32mo, price 3/6, published by H. K. LEWIS, London.

IT is not necessary to give a detailed review of a book which has reached its tenth edition. The fact speaks for itself. But apart from its excellence the book is brightened by a humour which, beginning in the preface, dedicated to the coroners of England with many apologies for the loss which they must have sustained from its publication, shines out at unexpected intervals and makes the reading a pleasure. The present edition has been somewhat reduced in size by a better arrangement of the type, but contains a great deal of new matter. To those who have not the book we say emphatically, "Get it, you won't regret it."

SANITARY REPORTS

I

BENGAL

LIEUT. COL. J. C. CLARKSON, I.M.S., the Sanitary Commissioner, Bengal, submits his report on the year 1906 in Bengal. Lieut. Col. Clarkson was on leave during the most of the year and only took over charge from Capt. Clemesha, I.M.S., on 15th November. The population of Bengal is now over 50 millions. The birth rate was reduced owing to high prices in 1905. The following gives an account of the new scheme recommended by the Sanitary Commissioner, India, Lieut. Col. Leslie, I.M.S., as an attempt to CHECK THE VITAL STATISTICS. This has been tried experimentally in the *thana* of Galsi in Burdwan District, the work being done by an Asst. Surgeon and two Civil Hospital Assistants. Lieut. Col. Clarkson says—

"Before the commencement of the actual operations, the staff made a rough census of the population in the area and compared their results in respect of the numbers, ages and sexes of the inhabitants with the figures obtained at the last census. Then they began to collect information about all births and deaths, and verify it with the respective entries in the *thana* register. In this way all these occurrences in this area during the period from 1st August to 31st December, viz., 618 births and 919 deaths, were duly enquired into, the corresponding figures in the *thana* register being 625 and 924. This difference is due to the fact that in the *thana* register of deaths 1 case of still birth, 4 cases of abortion and 1 case of death which occurred in May, were included, while 1 case of death was not registered at all, and in the case of births, 2 cases of abortion and 5 cases of still births were wrongly entered, besides 2 cases of birth were doubly entered and 2 births omitted altogether. Then out of 919 cases of deaths which actually took place, there appear to be no less than 508 cases (or 55.3 per cent.) in which the causes of death entered in the register were found to be wrong. The following statement will show details of the discrepancies which were very large (more than half) in the case of 'fever' and 'all other causes'.

Error to the extent of more than half (55 per cent.) is sufficiently startling. We hope this interesting experiment will be continued.

The year 1906 was a bad CHOLERA year in Bengal, the ratio *per mille* being 3.81 as compared with 2.33, no district entirely escaped and many suffered severely. There was also an enormous rise in the SMALL POX death rates, for which no satisfactory explanation is to be found. Plague, on the other hand, fell to half. Inoculation may be said to have been practically confined to the population of the Gya Jail, in no other place was it resorted to in any degree of frequency. An attempt has been made to deal with MALARIA and we quote Lieutenant Colonel Clarkson's account of these operations—

At the first three places, viz., Ranaghat, Berhampore and Jagadishpur, the operations chiefly consisted in filling in hollows and depressions, clearing jungles and spreading kerosene oil on the water surface of all foul tanks and cesspools, and at the fourth place, viz., at Maheshpur, quinine was distributed to the people free of charge, to be used by them as

Statement showing the results of verification made by the Medical Officers at Galsi

HEADS OF DISEASES	Total number recorded in the Thana Register	Total number of cases in which the cause of death is found to be wrong	CAUSE OF DEATH AS DETERMINED BY THE MEDICAL OFFICERS						
			Cholera	Small pox	Fever	Dysentery and Diarrhoea	Injury	Respiratory diseases	Other causes
Fever	752	449	3	4	1	151	1	237	53
Small pox	3	1			(typhoid)				
Respiratory diseases	19	4			1				3
Dysentery and diarrhoea	29	1							1
Other causes	97	52			6	32		14	
Cholera	18	1				1			
TOTAL	918*	508							

* This excludes the case of death omitted in the Thana Register

a prophylactic with a view to ascertaining how far this would lessen the prevalence of fever in that town. The operations were carried on at Berhampore and Ranaghat for three months from August to October at a cost of Rs 1,900 and Rs 3,400, respectively, at Jagadishpur for about ten months, from May 1906 to February 1907, at a cost of Rs 2,670, and at Maheshpur for five months, from July to November, at a cost of Rs 950. The experiment at Maheshpur shows only the extreme difficulty encountered in attempting to reduce by the prophylactic administration of quinine the amount of malarial fever amongst a community which is under no control and cannot be compelled to accept it, while that at Berhampore shows that it is a hopeless task to do any real or permanent good there, unless large and costly drainage works are undertaken its natural conditions being unfavourable. There is a long line of *jhul* several hundred yards broad and several miles long skirting the town, the treatment of which in connection with the operation will entail enormous expenses and the neglect of which will nullify the whole work. It is, therefore, proposed not to recommence the work at Maheshpur and Berhampore. At Ranaghat and Jagadishpur, many hollows of sizes were filled up, ditches, road cuttings, jungles, etc., were cleared, several tanks and cesspools were kerosine oiled. But there is yet much work to do in this connection, before any definite conclusion can be drawn as to the effect of these measures on the prevalence of malarial fever.

We hope that the Report of the Drainage Committee will soon see the light.

II

UNITED PROVINCES

THE birth and death rates are calculated on the population according to the census of 1901 viz 47,691,782. The birth rate was 40.2, against 44.2, the five year rate, the death rate fell on the other hand from 44 to 39 per mille. INFANTILE MORTALITY (of children under 1 year) was high, but in the past 16 years this has varied considerably, the 10 year average 1891-1901 is shown as 229.4, but since then it has varied from 226 in 1904 to 274 in 1903, and it was 250 in the year under report. The following note on the checking and verification of VITAL STATISTICS is worth quoting in full—

"The total number of cases verified during 1906 was 8,907, as compared with 8,796 in the preceding year. Of these, 3,544 deaths are reported to have occurred among children under 16 years of age, 3,360 among adults from 16 to 45 years, and 2,003 among persons of 46 years and upwards.

Among the deaths, the causes of which were verified, 1,129 are attributed to pneumonia and other respiratory diseases, 1,012 to plague, 820 to anaemia and debility, 752 to dysentery and diarrhoea, 692 to malarial fevers, 609 to unclassified fevers, 380 to cholera, 200 to small pox, 14 to enteric fever, and 2,478 to "all other causes" which include measles.

As regards deaths among children under 16 years of age, 575 are attributed to anaemia and debility, 472 to pneumonia and other respiratory diseases, 418 to teething and convulsions, 281 to malarial fevers, 239 to unclassified fevers, 239 to plague, 237 to dysentery and diarrhoea, 160 to small pox, 129 to cholera, 73 to measles and 655 to "all other causes." The unusual incidence of measles this year is also indicated by these figures. No deaths from this cause were verified last year.

The death rate from CHOLERA was high even higher than in the year 1905, the rate being 3.1 per mille against an average of .93 for 10 years (1896-1906). The report gives no account of its origin or spread and the disease appears to have been endemic, and in all the districts.

There was less SMALL POX, the rate being .07 against the ten year average of .37. As in the preceding year, May was the month of greatest and October of least prevalence.

There is only a short paragraph in the report on PLAGUE, the number of deaths in 1906 were only 69,660 against 383,802 in the previous month six districts were practically free from plague Almor, Haripur, Jhansi, Dehra Dun, Agra, and Jalaun, Billia and Bijnour suffered most.

There was a widespread epidemic of MALARIAL FEVER in September, 43 per cent of all cases of fever occurring from September till end of the year. Large quantities of quinine were sold and much was freely distributed.

The consumption of FILTERED WATER per head daily in the following towns is given—

Benares	19½	gals water, with house connections	6,421
Lucknow	7	"	97½
Cawnpur	18½	"	1,325
Agra	13	"	1,297
Allahabad	12½	"	2,274
Meerut	5	"	223
Dehra	7½	"	6
Mussoorie	6	"	
Naini Tal	6	"	97

House connections are a fertile source of waste, but the above figures cannot be well compared without estimates of the amount of water spent on flushing drains. The differences in the daily total consumption are remarkable.

The accounts given of the septic tanks at Benares and Lucknow are not very enthusiastic. At Agra the Crowley cart is in use and a great improvement in the system of night soil trenching is reported to have been effected.

The great Kumb Mela (12 year) took place and owing to the excellent sanitary precautions taken, there were only 33 cases of cholera. We gave a full account of this in our issue of March 1906 (p. 102).

III

PUNJAB

THE Report of the Sanitary Administration of the Punjab for the year 1906 has been submitted as usual by Lt Col C J Bamber, I M S, D P H, the Sanitary Commissioner.

The chief meteorological feature of the year was the very copious rainfall of September. The price of food stuffs early in the year was high, but towards the end of the year normal rates prevailed, and in many districts there was a demand for labour and high wages.

The most satisfactory feature of the year was the decrease of PLAGUE. We quote Col Bamber as follows—

"The death rate from plague in 1906 was 4.56 per 1,000 of the population, this is the lowest on record since 1902 when the disease assumed a severe form in this province. The mortality registered in that year was 8.52 per mille. In the following year, 1903, it rose to 10.22. The epidemic in 1904 was of the most virulent type, causing a death rate of no less than 19.71 per mille, a ratio of 3.5 per 1,000 higher than the annual ratio of deaths registered from all causes in England and Wales in 1904. In 1905 also the disease was very fatal, but there was some abatement, the death rate of 16.65 per mille was 3.06 per 1,000 less than in 1904. Thus the epidemic of 1906, with a death rate of 4.56 was of a very mild character compared particularly with the fearful visitations of the scourge in the previous two years."

Unfortunately this lull was of short duration and the results of the first quarter of 1907 show that the visitation was more fatal even than the worst of 1904. In 1906 the births

actually exceed the deaths for the first year since 1901, and the infantile death rate was 240 for females and 230 for male children.

CHOLERA was more prevalent but did not assume the form of an epidemic, the death rate being only 0.21 *per mille*, and the first cases usually would be traced to people recently returned from pilgrimages. The following note on **SMALL POX AND VACCINATION** may be quoted in full—

"Considering the remarkable immunity from small pox enjoyed by all civilized countries in which vaccination is thoroughly carried out a number as large as 13,239 deaths registered from this disease during the year must be considered very excessive. In England and Wales, for instance, the average annual rate of deaths recorded from small pox during the five years ended 1901 was only 0.25 *per mille*. But it may be mentioned here that the death rate from small pox used to be very much higher in the Punjab in former years when vaccination was less thoroughly carried out. During the past forty years since the introduction of the system of death registration in 1867, it has been possible to note the considerable reduction that has occurred in the prevalence of small pox in each successive decennium. Thus, during the first ten year period, the mean death rate from the disease was as high as 1.37 *per mille*. In the second period it decreased to 0.88, in the third decennium it fell to 0.59, and during the last ten years it diminished to 0.45.

"Of the four largest cities, Multan had an excessive rate of 6.3 *per mille*. Among the smaller towns, the following recorded the largest ratios—Pindi Bhatian 13.01, Chinnot 12.37, Ramnagar 10.25, Zaira 9.75, Khanna 7.03, Kot Mithan 6.88, Hafizabad 5.75, Bheera 5.46, Tarn Taran 5.19, Kila Didar Singh 5.18 and Nurmahal 5.05. Besides these, there are several other towns in which the death rate was also very high.

"The great sacrifice of life as evidenced by such fearful death rates from a preventable disease is deplorable. With the new stored glycerinated vaccine, a large number of operations can be successfully performed in a short time. But it must be borne in mind that it rests entirely with the people to avail themselves of the preventive remedy, and that the vaccination staff is strictly prohibited from using any sort of compulsion or harshness, but is ordered to leave the choice to those concerned. In these circumstances, it is indeed too much to expect that any marked decrease will occur in the periodical visitations of small pox, unless some change for the better in the present generally unfavourable attitude of towns people towards vaccination is brought about by the friendly advice and persuasion of members of Municipal Committees and other persons of influence and intelligence amongst their own communities."

On the all important subject of **PLAGUE** Lt Col Bamber has much of interest. We may quote the following—

General course of the epidemic—During the year, 120,745 cases of plague were reported in the Province, of which 104,863 proved fatal. There were 92,115 deaths in British districts and 12,748 in Native States.

"The epidemic, taken as a whole, may be characterized as a very mild one, compared with those of the previous four years, the total mortality being much lower than in any year since the general diffusion of infection over the greater part of the Province. The figures for the past six years are given below for comparison—

	Cases	Deaths
1901	36,739	20,998
1902	321,938	222,571
1903	341,267	210,697
1904	481,412	402,950
1905	451,791	390,233
1906	120,745	104,863

The following remarks on rat destruction are of great interest—

"This measure has assumed great importance. In the 1905-6 season it was carried out in some 3,000 towns and villages, the results were encouraging, although they were masked by the mild incidence of plague generally. General opinion, however, was pronounced in its favour, and it is considered by the officers engaged on the work that recrudescences were to a great extent prevented, aborted or delayed by it, and that the measure even when applied after infection, mitigated the epidemic. From Amritsar Captain Davys, a very careful observer, reports that out of eighteen well authenticated centres of endemic plague, where the disease has annually reappeared and infected the surrounding country, in eleven rat destruction was thoroughly carried out, and in these no cases of plague occurred, five were only partially dealt with, owing to various difficulties, and in each of these a recrudescence occurred, which did not go on to a severe epidemic, in the two remaining localities, where nothing was attempted, severe epidemics followed recrudescence.

"On account of the favourable results obtained, the measure was pursued with vigour. The returns are incomplete, but 100 municipal towns and about 9,000 villages were ratted in the latter half of the year. Over a million and a half rats were actually found dead after these operations, and this is generally considered to be but a small proportion of the actual number poisoned. The staff rarely have time to record the number found, except on the morning following baiting, whereas the mortality continues for some days, many are thrown or otherwise disposed of by the people before they can be counted. In spite of the severe prevalence of plague at the end of the year, recrudescence has been certainly prevented in many places and, presumably, altogether in certain districts, Jhang escaped during the whole year without a single case, although rat mortality, indicating endemic infection, has occurred in several places. No recrudescences have occurred in the Amritsar district, which is in the very heart of the infected area, all the plague being due to importation. There have been and still are many difficulties in the successful application of the measure, Jains, Bhabras and certain higher caste Hindus object to the taking of life in any form. For instance, in Mukerian, the whole town was baited, excepting two clumps of houses inhabited by Jains. A recrudescence of plague occurred in both these, again, in Rawalpindi city, which has suffered severely, the disease was started and spread from the walled-inhabited by Jains where no rat destruction could be done.

"There are other difficulties dependent on the ignorance and suspicion with which any new measure is received, the results, in numbers of places, have been unsuccessful, owing to many of the inhabitants collecting and throwing away the baits after they have been laid. It may be said, however, that these difficulties are disappearing with the experience gained by the staff and the people, and the measure is usually accepted readily the second time when it can be more perfectly carried out. All reports agree that the mass of the people accept rat destruction, and in many places even ask for it, in some, the people do it for themselves. If any plague measure can be called popular, it is rat destruction, as everywhere a connection between rats and plague is recognized, it causes less inconvenience than any other measure, and the people are also beginning to appreciate the fact that the removal of rats adds to their comfort and saves them from loss. It is consequently a procedure which can be carried out even in the absence of plague, and this is of the greatest importance in trying to prevent recrudescence. It must be recognized that, in order to carry out rat destruction or any other measure on the scale necessary, the people themselves must be the active agents. There is little or no hope that they will act on their own behalf without stimulation, but this may be supplied by their natural leaders, whose active co-operation has been and is being enlisted, as far as circumstances permit."

A year ago the newspapers were full of the great "wave of **MALARIA**" in the Punjab, it is, therefore, somewhat disappointing to find only about 20 lines devoted to the subject of "fevers." It appears to have been met chiefly by the free distribution of quinine.

IV

EASTERN BENGAL AND ASSAM

AN evenly distributed rainfall in this province in 1906 was nevertheless followed in many districts by inundations, and there was a sharp rise of prices all over the province. It is satisfactory to see that there was no corresponding rise in the death rates even in the districts where scarcity was most complained of.

The following table shows the **BIRTH RATES** of the various provinces of India—

Province	Birth rate per mille		
	1900-1904	1905	1906
1	2	3	4
Eastern Bengal and Assam	39.19	39.37	37.38
Bengal	38.91	39.55	37.32
Central Provinces	42.31	54.02	51.72
Madras	29.40	32.00	30.90
Burma	33.46	34.44	32.33
Bombay	30.51	33.07	33.84
United Provinces	44.07	41.24	40.22
Punjab	40.50	44.40	43.70
North Western Frontier Province	32.30	35.35	38.60

THE INDIAN MEDICAL GAZETTE

[Nov, 1907]

The next table gives the provincial DEATH RATES

Province	Death rate per mille		
	1900-1901	1905	1906
Eastern Bengal and Assam	31.52	35.06	31.67
Bengal	33.42	38.53	36.08
Central Provinces	37.35	37.21	43.47
Madras	21.90	21.40	27.40
Burma	23.17	24.93	27.15
Bombay	46.31	31.84	35.06
United Provinces	33.80	44.00	39.07
Punjab	44.90	47.60	76.90
North Western Frontier Province	25.50	26.79	33.73

The great variations in the birth rates of various towns explained by Lieut Col E C Hare, I M S, the Sanitary Commissioner, in this report, and except for the curious town of Barpeta it is to be accounted for by the presence or absence of the wives and families of men of the trader and working classes, whose families are often left in the villages, while they crowd to the towns for employment.

On the question of the accuracy of VITAL STATISTICS Lieut Col Hare has much to say, and he sums up his remarks as follows—

"In the rural areas of Eastern Bengal and in the Sumner Valley, I believe the statistics on the whole give a fair idea of the prevailing conditions of life and that the figures though not very accurate, are of value in comparing the vital occurrences of the different districts. I also think that the collecting agencies are as good as can be obtained at the present time."

"In rural areas in Assam the Eastern Bengal chaukidari system does not exist. The system of collecting has recently been revised and the duty has been placed in the hands of the gaonbaras who report to the mauzadars. It is too early at present to give any idea of the effect of the change on the returns."

"In urban areas, however, where reporting is compulsory, the returns are very imperfect, and the machinery by which the collections are made varies so much in the different localities, that it is difficult to organize or control it and I do not see much hope of improving it, unless the agents are brought entirely under the control of the Sanitary Department."

"I would propose to appoint the Inspectors or Sub Inspectors of Vaccination as Registrars under Act IV (B C) of 1873. They are under the immediate control of the Civil Surgeon, who is the District Health Officer and compiles the statistics and they have under their supervision the Municipal Vaccination Staff, the individual members of which are in close touch with the people and could readily collect information by periodic house to house enquiries in the circle within which they vaccinate."

"Proposals to place the compilation of the district statistics in the Assam and Sumner Valleys in the hands of the Civil Surgeons have been submitted for the consideration of Government."

Lieut Col Hare here gives a very interesting account of the prevalence of the chief diseases.

Plague was practically almost entirely absent, and due to small imported outbreaks.

The CHOLERA rate was higher than the five year average and was especially bad in the towns of Mangaldai, Dhubri and Gauhati. The use of pepermangate of potash is again favourably reported on. The following remark by the Sanitary Commissioner may be quoted in full—

"There is a great dearth of drinking water in some parts of this district especially in the Lalbari and Rangia Thanas and in the tract of country which lies on either side of the Grand Trunk Road. In over 50 villages which the Civil Surgeon personally visited, his enquiries showed that the immediate cause of the outbreak in almost all cases was the result of contaminated water, and he reports that as the necessity of having good water, and that application for grants in aid for improving the existing tanks making new ones, and sinking wells, are numerous.

Considering the continued high rate of mortality from cholera in this district and that it is a constant source of infection to the surrounding country, I think it would be desirable to encourage this feeling on the part of the inhabitants, by having a detailed enquiry made in those villages which border on either side of the Grand Trunk Road and to organize a definite scheme upon which the drinking water of this portion of the district can be improved."

SMALL POX was prevalent and was most deadly in the town of Barpeta, where the religious feeling prevents the people from being vaccinated with matter taken from the cow. As a consequence of this zeal they have a small pox death rate of 33 per mille as compared with the provincial rate of 0.28, a better example of a fitting punishment for ignorance it would be hard to find.

After mentioning the present inquiry into black water fever in the Durs, the Sanitary Commissioner makes the following pertinent remarks—

"There is no doubt that the sanitary condition under which both the labour force and the employers live, leaves much to be desired."

"The coolies in many of the gardens are insuiting villages run up without any attempt at regularity or order, and they are crowded with a fever stricken population, which remains year by year practically without control or medical treatment."

"The endemic fever index on some of these gardens is reckoned by Stephens and Christophers to be as high as 74.83 per cent. The mortality is very high and represents an enormous waste of labour from sickness and ill health."

The following gives a graphic account of the difficulties a sanitarian has in Eastern Bengal and is worthy of the attention of self appointed critics in London and elsewhere—

"Rangpur is another district which is notorious for its heavy mortality from FEVER. The average death rate from this disease for the past ten years is 29.26 and it appears not to be evenly distributed over the district, but to vary from 23.44 to 37.87, in proportion to the waterlogged condition of the thanas. The Deputy Sanitary Commissioner, Captain Gomulay I M S, is deputed by the Sanitary Board to make a local enquiry. He showed that the unhealthiness was chiefly confined to two areas, viz—

(1) to the River Gogra which drains the district from north west to south east and has become silted up at its exit into the Teesta, and

(2) to a series of swamps occupying about 120 square miles of the district, which have been formed by changes in the level of the country."

"The inhabitants of this district in the Mahiganj thana live in small villages of ten or twelve houses, each built on artificially elevated islets, which are fully occupied by the huts and the surrounding bamboo jungle."

"These paras, as they are called, are dotted about at intervals varying up to half a mile, and are connected by roads, which, in the month of October (at the end of the rainy season) are 4-5 feet below the surface of the water."

"The people live by fishing, keeping cattle, selling milk for ghee, and partly by cultivating the higher patches of land as soon as they become dry."

"The cattle live in stables practically the whole year round, and cutting grass down to the surface of the water for them to eat."

"Sanitation and conservancy arrangements are primitive, and for six months of the year the villagers are unable to go beyond their own doors for the purposes of nature."

"The soil is heavily charged with organic matter, both animal and vegetable. At the close of the rainy season the water flows off at the rate of 3-5 inches per second and instead of being drained off by November, it remains till the following March. Its surface is never roughened by a breeze, as it is protected by the grass which grows through it and the mosquitoes deposit their eggs upon it in abundance and they develop without being disturbed."

"This being the condition under which the inhabitants of the Mahiganj thana are living it is hardly a matter of surprise that the mortality among them from fevers is so severe."

"The population of the thana in 1901 was 106,332. The average total mortality among the villagers for the past ten years is 41.37 per mille of which 37.87 is reported to have been from fever. There are between 80,000 and 90,000 people actually living within the river covered by the soil."

"Several attempts have been made to drain the neighbourhood of Rangpur town which lies in the angle between the Mahiganj soil and the River Gogra, but they have been only partially and temporarily successful, partly owing to the inadequacy of the channels, which is said to be enormous volume of water and partly to the sluggish current of the Gogra before it became silted up and to connect it with another channel which will drain the water into the Gogra, between 2-3 miles below the town, cutting off a curve of about ten miles in the river."

On the subject of "Jute steeping" Lt Col Hare makes the following sensible remark—

"Several references were made during the year in connection with the use of tanks for steeping the jute plant in the preparation of the fibre, and the possibility of the practice being detrimental to the health of the locality. In Europe

the process would undoubtedly be classed among the 'obnoxious trades', on account of the very disagreeable smell from the rotting cellular tissue, but there is no evidence that it is dangerous to health, unless the drinking water is contaminated."

Space prevents us from quoting further from the valuable report, which is certainly the most instructive and interesting we have read this year.

V

MADRAS

In spite of fairly favouring rains in 1906, the price of food grains in Madras remained considerably above the average. Registration of vital statistics is still in the hands of "illiterate and irresponsible officials," and is therefore defective and untrustworthy. The birth rate is given as 30.9 per mille, and the death rate was in the year 1906 only 27.4, the infantile mortality under one year averaged 191, in the Nilgiris it rose to no less than 324. CHOLERA was widespread during the year and caused 142,000 deaths reported as against only 16,880 in the previous year. Potassium permanganate was used in wells and "as usual it has been reported to yield good results."

There was an increase of small pox prevalence. Plague on the other hand was little felt, only 893 deaths.

VI

BURMA

THE estimated population of the province is over 6½ millions. On the whole, Colonel King C.B., I.M.S., who submits the report, thinks that registration is more carefully done in Upper than in Lower Burma. Increased export to India owing to high prices there led to increased prices in Burma. In the towns of Upper Burma the birth rate is given as 34.1 and in Lower Burma, if we include towns and rural areas, 32.3. The death rate of infants under one year was 379 in Upper and 249 in Lower Burma. One fact is certain in "the mass of ERRONEOUS STATISTICS," viz., that the mortality of infants is excessively heavy. Col. King then gives an interesting account of the Baby Show in Rangoon and the "Society for Prevention of INFANT MORTALITY."

The CHOLERA death rate was heavy. The following graphic description will explain why this is so:—"The foul hands of the attendants on the sick, the washing of clothing, ablutions, etc., suffice to convey what is a mere microscopic organism. In the face of these trite truisms, it is not difficult to see either how or why cholera spreads in Burman communities. It will be understood that there are numerous villages which, for certain parts of the year, have their rivers flooded for varying periods by the seasonal rise of rivers, and that this water, in spreading beneath houses poised on piles passes over the cess pits which each owner maintains, and that, during flood, defecation proceeds direct into the water, that, in others, this action of flooding takes place daily or at intervals of high tides, and that the neighbouring creeks supply, on the receding of the tide, the fresh water for the inhabitants. Even where flooding does not take place, a favourite arrangement is for towns built along the banks of the rivers to arrange for overhanging latrines, without regard to the position of their own drinking water supply or that of neighbouring towns down stream. A circular letter was therefore issued to all riverine Commissioners, urging both in the interests of neighbouring dwellings and protection of the water supply, that the building of houses on the banks of rivers so as to have between the dwellings and the river no road or clear frontage, should be restrained. Nor does this complete the list of possible methods of contamination. Much of the traffic of the country is conducted by means of boats, and many of the inhabitants reside constantly on rafts. In both cases, ordinary defecation is conducted direct into streams that form the water supply of villages. With the knowledge that this occurs, it would obviously be desirable to appoint sites for trading boats, below places where water is drawn for drinking purposes by the people. This aspect of the matter has been placed by me before Government, but, in the absence of a trustworthy organization, interference with the boat-trading community was not thought desirable. However, a beginning of reform in this direction has been made by requiring two towns to make the necessary arrangements. In illustration of such conditions, I would state that I found an important private company drawing the water supply for its employees on the 'downside' of the river, within 100 feet of some dozens of 'country boats'. Even when the rivers are not concerned in the distribution of cholera, the absence of structural care in reference to the wells built some years back invites con-

"In dealing with such large rivers as the Irrawaddy and the Upper Chindwin, there is a tendency by some to imagine that the bulk of dilution is a sufficient protection, but, what ever may be the condition in midstream, it cannot be doubted that, in the neighbourhood of villages, water near the bank is of dangerous constitution from the presence of intestinal discharges, and that, necessarily, the chances of imbibing pathogenic microbes must be run by those who use it."

Col. King also gives an interesting account of the **FEVERS OF BURMA**. We are interested to see that it is intended to introduce tablets of quinine instead of the bitter mouthfuls from the price packets. Till a successful method of making readily soluble **QUININE TABLETS** is evolved, we need look for no real increase in the use of quinine by the general public, and the sooner Medical Store keepers become more up to date in this matter the better.

Plague caused 8,637 deaths, and Colonel King introduced the methods he has for years past used in Madras. We may quote his own words:—

"The whole of the **PLAGUE RULES** under the Epidemic Diseases Act underwent a thorough revision by Government, more especially in the direction of giving power to local authorities to secure systems of surveillance in advance of plague. Instead of segregation being regarded as the prime rule to be enforced at the commencement of an epidemic, it was laid down that in no case should this be practised otherwise than when there was reason to believe that the persons concerned were so untrustworthy as to be likely to leave the neighbourhood of an infected locality, without giving information of the fact. Instead of segregation, 'Exemption Certificates' are issued, requiring attendance once daily for six days. This has proved useful in practice. I am of opinion that any tendency to neglect this simple interpretation of requirements is an error in policy that must be expected to be followed by concealment of cases. To enable the system of surveillance to be enforced, ward headmen and block elders had assigned to them definite duties in aid of the Civil authorities, so that their obedience could be legally required. The general conduct of disinfection and the organization necessary in respect to personnel and equipment, both in Municipalities and rural areas, was explained in an appendix to the official notification issued by Government. It was, however, realized that the correct working of the new rules must largely depend upon there being at disposal a sufficient staff. Unfortunately, Burma possesses no Certificated Sanitary Inspectors, and efforts were therefore at once made to supply this defect, as far as feasible, by training so-called Temporary Plague Inspectors. The increase of plague and the necessity to keep in touch with methods employed caused Government to place at my disposal Captain Williams, I.M.S., D.S.O., as Special Plague Medical Officer for the Province. Under him these Inspectors were trained, in the intervals of his carrying out inspection in infected localities.

"My object in stating the above facts is to make it understood, that it cannot be safely held that the infected rat is the sole medium of transmission of plague to man and the rat, until obvious blanks in etiology are filled. Up to date, there is nothing which disproves the opinion that I, in common with most sanitarians in India, have always held, namely, that man is the chief introducing agent, and that the rat is the dreaded disseminator, as a result of the requisition of infection by the microbe discharged from the system of man. If this be not correct, on the other hand, to say that only fleas are the infective agents of rats, whilst not disproving that the mucus of rats, then bloody discharges, urine and faeces contain the plague microbe, although their vitality be limited to hours, can affect little the sanitarian's methods. At the most, it would dictate the use of an insecticide as well as a disinfectant, under certain circumstances, although, up to date, there can be no doubt of the great efficacy of special and general disinfection. But, the prime factor would remain that if the spread of plague from area to area is to be prevented, the utmost effort must be given to the surveillance of threatened populations, and the control of those infected. In short, as stated by me in the *Plague Inspectors Manual of 1902*, 'these considerations justify the existence of expensive organizations to secure prompt notice of the occurrence of imported cases of plague and as near an approach as attainable to extermination of rats in threatened areas, as a measure not only humane but financially economical'. To meet plague, an organized Sanitary Service that shall be capable of contending each inch of territory by the discriminating use of all sound methods is essential. Such a service would not only defeat the invader but prevent invasion, and this is the true note not only of sanitation but of finance. In short, the only truly 'commonsense plague policy' that can be rationally relied upon, and has in one part of India (Madras) at least stood the test of ten years of practical experience, is systematized surveillance (with full liberty of the person) of, usually, controllable human beings, the consequent early sanitary treatment of imported cases in uninfected localities,

and the consequent prevention of infection of rats, who are uncontrollable disseminators of infection. The staff necessary may, at first sight, appal the holders of the strings of the public purse, but that the method is decidedly cheaper and in the true interest of commerce (the real source whence the purse is filled) than in allowing infection and then attempting to combat it, there cannot be the slightest doubt. In proportion as this fact is realized in various areas of India only can successful resistance to invasion be attained for neither upon inoculation nor killing, nor flea killing alone can success depend."

The whole report is of interest and value and is the more interesting, because it is probably the last sanitary Report that Colonel King will write as it has been wisely decided to appoint a whole time Sanitary Commissioner for Burma.

VACCINATION REPORTS

I

EASTERN BENGAL AND ASSAM

THERE were 1,318,032 vaccinations performed in the year by the Vaccine Department, assisted by dispensary agents, tea gardens and railway agents. We quote the following from Lieutenant Colonel E. C. Hare's report—

"In the Vaccine Department the percentage of successful primary operations was 98.57 and of re vaccination 71.66. The percentages in vaccination performed by dispensary agents were 97.59 and 86.08, respectively."

"DIFFERENT METHODS OF VACCINATION"

(1) Vaccination direct from the calf, which was hitherto practised in the Eastern Bengal districts has been discontinued except in the Dinajpur, Rajshahi and Bogra districts. It was expensive and cumbersome, and was found to be no longer necessary as glycerinated vaccine is being supplied in its place.

(2) Arm to arm vaccination with humanized vaccine has also been discontinued in compulsory areas, and arrangements are being made to discontinue the practice in rural districts also during the coming year, by supplying the whole province with glycerinated vaccine from the Central Depot at Shillong.

The following table compares the percentage of the operations performed with each kind of vaccine in 1905-06 and in 1906-07—

	1905-06	Percentage	1906-07	Percentage
With calf vaccine	266,427	18.85	31,717	2.43
With humanized vaccine	737,057	52.15	403,536	31.00
With glycerinated vaccine	409,658	28.99	866,501	66.56

"A small quantity of lanoline paste was supplied to some districts at the special request of the Civil Surgeons but the vaccine is not satisfactory, and the practice will be discontinued. The glycerinated vaccine is much appreciated. A considerably greater number of tubes was supplied than was estimated for at the beginning of the season, but it was by no means equal to the demand. Arrangements are being made to prepare 1,500,000 tubes for the next season, which should be sufficient to meet all the requirements of the province."

Inoculation is still too prevalent and the following note is of interest—

"In Cachar, the Civil Surgeon, Captain Scott I.M.S., has taken great interest in the work. He discovered some professional inoculators who had been working in the district for many years past and converted them into licensed vaccinators supplying them with vaccine and teaching them European methods of vaccination and he employed them to vaccinate the Manipuris living on the borders of the district, who had formerly given much trouble. He also made a point of inspecting all the children at the schools and at other gatherings during his tour, to estimate the value of the vaccination work. He found a large proportion protected everywhere, few being without marks of either vaccination or inoculation."

"In Sylhet also some *Ganaks* were prosecuted for practising INOCULATION, and vaccination was performed in many villages in which the people had formerly objected to it. Several large villages in the Sunamganj subdivision were found to contain no vaccinated person."

It has been wisely decided to employ no vaccinators on the inspecting staff, unless he knows enough English to read circulars and to compile his registers.

Colonel Hare gives the following account of the VACCINE DEPOT in Shillong which has been celebrated for years past for the excellence of its lymph—

"The expenditure was Rs. 16,855 12 11, showing an increase on that of the previous year of Rs. 6,650 10 4. 948 calves were vaccinated and vaccine was taken from 781. 848,408 tubes were loaded."

"In 1905-1906 the Eastern Bengal districts were supplied with lanoline vaccine from the Calcutta and Darjeeling depots. During the year under report these districts were supplied with an equivalent quantity of glycerinated vaccine from the Shillong Depot. The quality of the vaccine was uniformly reported to be excellent."

"As has been shown above in paragraph 7, a large increase has been made in the number of operations performed with glycerinated vaccine. Arrangements are being made to supply the whole Province with it during the ensuing season, and to discontinue arm to arm and calf to arm vaccination."

"A new operating room is being made in the depot, with impermeable marble flooring and walls and the site has been extended so as to allow of the unvaccinated cattle being kept separately from those under operation."

"Special apparatus is being purchased with which to mix the pulp with the glycerine, and another apparatus for mechanically sucking the mixture up into the capillary tubes. The latter instrument has been designed by Major Enticam, I.M.S. It promises to be exceedingly useful."

"Thanks are due to Major Green, I.M.S., the Superintendent of the Depot to whose careful management and supervision the excellent quality of the vaccine has been due, and to Hospital Assistant Kamal Charan Datta, on whom the burden of its preparation and distribution has fallen."

II

PUNJAB

THIS report was submitted on 1st July 1907, by Lieut. Col. C. J. Bamber, D.P.H., I.M.S., the Sanitary Commissioner. Capt. W. H. C. Forster, I.M.S., now on special duty, was Deputy Sanitary Commissioner up till 26th July, and Capt. H. M. Mackenzie till end of the official year. Lieut. Col. Bamber reports as follows—

"Compared with the previous year, the work of the District Staff shows a deficiency of seven per cent in the case of primary vaccinations and twenty one per cent in re vaccinations. The decrease is accounted for chiefly by the fact that the vaccinating season of 1906-7, unlike that of the previous year, was extremely unhealthy. During the first half of the season, that is, from October to December, malarial fevers were very prevalent in many districts of the province, and in the second half from January to March, plague increased to an alarming extent which interfered seriously with the vaccination work, particularly with the re vaccination of grown up children. A full explanation of the unusual decrease or increase in the amount of work done in different districts will be given in my detailed triennial report next year. It is gratifying to observe that the total number of primary vaccinations performed by the District Staff in 1906-7, in spite of the severest visitation of plague, was about twelve thousand in excess of the average of the previous five years. The vaccination establishment was kept well under control."

The success in primary vaccination cases is given as 99.39 per cent and for re vaccinations 79 per cent. The work of the special staff was good. Lieut. Col. Bamber writes—

"The work of the Special Staff was very satisfactory during the year. The vaccinators performed a total of 69,300 operations, of which 56,057 were primary vaccinations and 13,243 re vaccinations. These figures show a considerable increase as compared with 44,120 primary operations and 3,005 re vaccinations in the previous year. The output in 1905-6 was very poor, as the vaccinators were employed on the earthquake relief work in the Kangra district, instead of doing vaccination in the Hill States during the summer months."

The results of the use of the chloroformed glycerinated lymph were excellent. We again quote from the report—

"It appears from the report furnished by Capt. Mackenzie who was in charge of the Central Vaccine Institute, that during the months of November to February 152,080 primary vaccinations and 24,603 re vaccinations were performed with chloroformed glycerinated vaccine with an average case success of 99.88 per cent and insertion success of 98.72 per cent in primary operations, and a case success of 81.00 per cent and an insertion success of 80.16 per cent in re vaccinations. These results are most satisfactory. Capt. Mackenzie deserves much credit for the efficient manner in which he supervised the work of the Institute."

The Punjab Government have sanctioned the scheme proposed by me for the expansion of the work of the Central Vaccine Institute, with the view to supply tubed vaccine to every district of the province. The plans and estimates of the proposed buildings are being scrutinized by the Public Works Department."

It would be interesting to know the period for which the chloroformed emulsion retains its full activity, as this is an important question in a hot climate like that of India (see Moncton Copeman, *Albion's System*, Vol. II, Pt. 1, p. 765).

Current Literature.

Treatment of Simple Glaucoma.—A paper on this subject was read before the section of Ophthalmology of the College of Physicians of Philadelphia on December 18th, 1906, by Dr. Cheney (reported in *Ophthalmology*, April 1907). It is pointed out what different opinions prevail as to the treatment. How one man believes iridectomy is no use and more likely to do harm than good, another believes in it, but does not operate if a scotoma exists or the colour perception is impaired, a third believes in miotics and regards the presence of inflammatory symptoms as the only indication for operation, a fourth believes operation of little use except in the early stages of the disease, and a fifth operates when miotics have failed in preventing its progress. The majority will probably agree not to advise iridectomy unless increased tension can be satisfactorily demonstrated. The author would regard glaucomatous cupping as sufficient proof of pathologically high tension, whether palpation reveals apparently high tension or not. In acute glaucoma we can tell the patient definitely, it is operation or blindness. In chronic types, while we may say that iridectomy offers the best chance of preventing the progress of the disease, we must nevertheless admit that useful vision is at times retained for years without operation, that failure of vision may be more rapid in consequence of operation, and that occasionally complete and irreparable blindness is its immediate result. If operation were even earlier than it usually is, the results would no doubt be better. It is then, however, that patients obtain most relief from miotics and are most unwilling to have it performed. The life probability may in elderly patients, as indicated by the age, general physical condition and ancestry, be taken into account in deciding on operation or no operation. With useful vision still remaining in both eyes, iridectomy should be advised in one, and the question of the second decided after a sufficient time has elapsed to determine the success or failure of the first. Bjerrum's test is available now for determining the presence or absence of glaucoma and is very useful in distinguishing between it and optic atrophy. As regards other operations for glaucoma, sympathetomy introduced by Jonnesco in 1897 has proved a failure in congestive cases, and its value in simple glaucoma is still debatable. It cannot be recommended and has various troubles of its own to answer for, such as dysphagia, dysphonia, lachrymation, etc. Lagrange's operation introduced in 1906, in which a portion of sclera is excised, seems to have a future before it, and Major Herbert has introduced several valuable modifications in the operation for glaucoma, the latest of which he is about to publish and which promises to be of great use in cases that have hitherto been very unsatisfactory.*

Expression of Cataract.—Cheney of Boston carefully reports (*Ophthalmology*, October 1906) ten cases of Smith's operation for removal of the lens in its capsule. He made three variations from Smith's technique, (1) keeping the speculum in all the time—neither this nor contraction of the lids was accountable for the three losses of vitreous he says, (2) substituting a narrow dull eyed spatula for the strabismus hook which he found bruised the corneal epithelium, and (3) making the section further back in the cornea. Of the ten cases one suppurated on the eighth day (not attributable to the mode of operation), three had loss of vitreous (the suppuration among them), with good ultimate vision in two, one had iritis, in two floating opacities were found in the vitreous, and in two the eyes became red and inflamed after the seventh day and the wound

opened up along its length, healing finally with incarceration of the iris. There were two to three nistagmism in most of the cases. In three cases the results were ideal and these were cases in which the iris was tremulous before operation, i.e., the cataract was overripe. The visual results were better on the average than in an equal number of extractions recorded so soon after operation. Dr. Cheney emphasizes the importance of keeping the cases under observation for some time and points out that his three most unfavourable cases would have been classed as favourable results had they been discharged on the sixth day. "As to the gravity of vitreous losses in cataract extraction," Dr. Cheney remarks "a separation of the retina undoubtedly occurs sooner or later in a certain per cent of the eyes, and, though I cannot recall any such case in my experience, it is probably not for the reason that I have been more fortunate than others, but rather that the patients have passed from observation. A loss of vitreous in an uncomplicated senile cataract is certainly not good surgery. In the majority of cases it should be classed as a surgical bungle. A new operation which adds to the per cent of vitreous losses must show very great advantages over the old to make its general application desirable." While inclined to think that a small per cent of lenses may with advantage to the patient be expressed in capsula, Dr. Cheney will "do very little more pioneer work in attempting to determine the cases best adapted to this operation," and he ends by quoting Smith against himself "There is virtue in knowing when to quit and in letting well enough alone."

Dr. Myles Standish in the same journal records three expressions for immature cataract. All did well, and in only one was there any complication. Some iritis in a diabetic subject in whom the expression was accomplished with much difficulty and a small vitreous prolapse. Dr. Standish, judging from this small experience, is now anxious to maintain that the operation is safe or always desirable, but he says the results in these three cases were probably better achieved with less distress to the patient during convalescence than would have been accomplished by any other operative method.

If expression proves to be suitable for immature cataracts, a great advance will have been made in saving patients years of miserable suffering. What is most wanted indeed at present, next to prolonged observation of cases operated upon, is a definition of the limitations of the operation and of the cases suitable for it. No surgical operation can be said to be suitable for all cases of the disease for which it was designed. To say so would be to maintain that all patients were alike and that a disease showed no variations. In cataracts we know this is absurd, for few cataracts and still fewer cataract operations are identical. Even if cataracts were all alike, and their owners too, the eyes containing them are not. To attempt expression in cases of high myopia for example would be bad practice, yet we are told expression is suitable for all cataracts, and we know it is being done for all without distinction.

R. P. M.

Correspondence

AN OUTBREAK OF DROPSY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I herewith beg to note a few new cases of "Acute Dropsy" which came under my observation and treatment in my private practice here at Kurseong, and hope to be published in your Journal, and believe it will draw the special attention of the authorities, and also will be interesting to your readers, as it is a new disease of the Hills.

* We hope to publish a description of this operation in our December issue.—ED., I. M. G.

viz "ACUTE DROPSY"

Since two months last, there are a peculiar sort of mosquitos showing their appearance here on the Hill from Kurseong to Sonada and some other neighbouring villages tremendously, which had never been here before but they are not the kind of Culex or Anopheles in any respect, and so I do not think that they are the carrier of any epidemic of malarial affection, but a few days after their appearance an outbreak of "œdema of the leg" observed abundantly throughout the place mentioned above.

These attacks are generally associated with slight fever and gastro intestinal disturbance, though always not the case, but in my careful inquiry in several cases with regard to the latter as to whether any special articles of food or excess of alcohol on the attack could not be found the base of it.

I have noticed that in some cases the swelling of the foot and leg came on suddenly without any previous complication, and it is marked also that the swelling begins from the foot and comes on gradually upwards to knee even up to the thigh in few cases, when there is no pain, except the feeling of stiffness and heaviness and pit on pressure. Besides these the swelling diminish or nearly disappear when kept quite in bed at night and again increase in the day time as much as walked on or hanged down. Sometime a peculiar sensation felt therein, but in latter stage it become much painful tender and heavy and no sudden decrease or increase of swelling is observed.

On examination of the heart it always seems to be weak and even irregular sometimes. Pulse weak and quick and breathing hoarse, though there is no defect in the lungs.

I have treated with a variety of diuretic medicines, but no drug except nervous and heart tonic as digitalis, &c, seemed to effect the disease in any way.

I have had correspondence with Dr R L Dutt in the matter, who has had experience of the disease, and examined bacteriologically the blood of two affected persons, and I also came to know that Dr Rogers, the Professor of Bacteriology examined the blood of three cases like this, but all in vain as it was not sufficient for discovery of the microbe of the disease.

Moreover it is to be noted here also that it appears to be similar to "neurotic œdema" which I read in your August issue, but if the permeability of the blood vessels is suddenly increased and the serum accumulate in the serous membrane by the influence of vasomotor nerve, or there be any cause of absorption of any toxic substance by the alimentary canal as noted therein, I could not understand the cause why the swelling is so circumscribed.

Under the above circumstances it is believed that the pathology and physiology of the disease is obscure, and so no specific for it yet been known but I agree with the opinion of Dr Dutt in the point that there is a certain species of mosquito which is the carrier of the said outbreak.

The fatal sign of the disease is generally coldness of the extremities and shortness of breathing, which I believe to be the main cause for weakness of the heart and always finally succumb to heart failure.

I remain,

Sr,

Yours faithfully,

A K PAL,

Late Medical Officer, D H Railway

KURSEONG,

September 23rd, 1907

[See above, p 422—ED, I M G]

THE B M A MEETING, 1907

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—I recently attended the annual meeting of the British Medical Association at Exeter. Coming home from India I more especially attended the section for Tropical diseases, but also when time was available I put in attendance at other lectures and demonstrations which I thought might prove of interest. It was a matter of disappointment to me to see so few I M S men present at the Tropical section. Out of an average daily attendance of 40, I do not think there were more than half a dozen I M S men though there must be a large number of men home on leave. I attributed this absence to the interruption which a visit to Exeter would cause to work in London or to a holiday, also to the long distance to be travelled and perhaps to the objection some men have to a miscellaneous gathering half bent on pleasure half on work, also perhaps to some uncertainty as to the real value to be got from attending the meeting.

I am writing this to show what really good value I got from attending, and to strongly recommend all I M S men to attend on another occasion if they have the opportunity.

Several interesting points were discussed in public, and privately I had most interesting conversations with men from other parts of India and other tropical countries. I give below a few of the points of interest as they came before me at the meeting.

(1) Papers on prophylaxis of malaria and antimalarial sanitation were read by Professor Simpson, Hauszerman and Dr Sambon. This is a well worn subject but full of interest till decided principles suitable for each locality are laid down and adopted. One medical officer from Egypt gave us some very sound regulations on drainage which he hoped to get passed in Egypt and which seemed very suitable to parts of India especially the Punjab, where irrigation is being so largely extended.

(2) Papers on diabetes in the tropics were read by Sir Havelock Charles, Dr Chunder Bose and Sandwith and others. A long and interesting discussion ensued on the probable cause of the prevalence of diabetes among Bengalis and several practical points of interest came before the meeting.

(3) Major Rogers gave a lantern demonstration on the varieties of Indian fevers, pointing out the clinical courses of the seven days fever of Calcutta and the three days fever of Northern India. He also emphasised the value of Ipecacuanha in hepatic congestion.

(4) Professor Minchin gave a very clear and lucid description of trematodes and allied organisms with diagrams, and Sir Patrick Manson explained Dr Sambon's suggested new classification of Hemoprotozoa which he thought was clear and simple for the use of medical practitioners.

(5) One of the most interesting demonstrations was Dr Bashford's, with lantern slides and diagrams on the work of the Cancer Research Institute. He detailed the work and showed charts and histories of several generations of transplanted tumours. Dr Clowes of the Buffalo Research Institute also gave a demonstration of the work in America. It made one realize that many important facts had recently been discovered and that we have every hope that the difficult cancer problem will emerge from darkness into light under the efforts of such earnest workers.

(6) The pathological exhibition was perhaps the most interesting feature of the meeting, a large hall had been hired for the purpose. Many interesting specimens of morbid anatomy, photographs, drawings and microscopic slides were shown. Mice inoculated with cancer in various stages were exhibited. Among others, tumours in the bladder and intestines from bilharzia, appendices with foreign bodies, gynaecological specimens, microscopic slides with trypanosomes in all stages, malaria, spirochæta pallida, Plummer's bodies, also a good collection of biting flies and insects.

(7) The exhibition of new instruments and drugs and medical appliances held in another hall was also very instructive. The most recent inventions in X-Ray work were to be seen. New forms of operating tables, many new inventions to facilitate surgical technique, also many new drugs as slovaime, novocain, were exhibited and advertised by various firms.

The above are only a few of the many interesting subjects which I came across during the week, and I am sure anyone from India attending the meeting of the B M Association in the future will be amply rewarded for his trouble. I think, most of us thought the three mornings for papers and discussion were too short. Not one of the best benefits of such a meeting is the advantage of talking to and hearing men more learned and experienced than oneself from other countries. The stimulating effect of mind upon mind, fresh suggestion for work in the future, new lines of thought upon dark problems of our work and life are all factors of such a meeting and cannot fail to help one. It also becomes obvious that the earnest co-operation of medical men is almost a necessity to promote our knowledge and to help us to carry out medical surgical and sanitary reform in the countries in which we live and work.

Yours, etc,

G T BIRDWOOD, M D.

August 29th, 1907

MAJOR, I M S.

Civil Surgeon, U P

USE OF RUBBER GLOVES IN INDIA

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—There is a widespread belief that the habitual use of rubber gloves for operations in India is impossible owing to the expense of frequent renewal.

During the last year I have been using them very regularly three times a week for all clean operations and find that with care a pair should last for a month. In England their price is 2s 6d a pair or less, so the annual expense is not prohibitive.

They are boiled for five minutes on operation mornings and kept in a jar of 1-30 carbolic when not in use. Before drawing on they are filled with fluid and any leaks noted, so that a thumb stall may be drawn over the leaking finger. Before a

second operation the gloved hands may be washed with spirit, soap and sterile water, rinsed in 1-2000 perchloride without harm.

The wearing of gloves does not, of course, lessen the necessity for preparing the hands with just as much care as if no gloves were worn. This is essentially necessary if one remembers that a puncture may occur unnoticed at any time. Towards the end of the month the fit of the gloves is somewhat baggy, and it is then that perforations are likely to occur as a fold is easily nipped or punctured.

The more one grows accustomed to then use the less likely are these accidents to happen. It is possible that their condition might be preserved better if they were kept dry and drawn on by the aid of sterile glove powder, but one would not have the same complete assurance as to their asepticity which is given by the knowledge that they had been freshly boiled.

The need for the use of rubber gloves is far greater in India than in England. The causes of irritation, such as insect bites, dirty water, prickly heat, etc., are more common, while the surgeon's skin is more susceptible, the mouths of its dilated ducts forming ready points of lodgment, and his power of resistance to infection by cocci is often low.

Again, the hands of a surgeon in India are more frequently exposed to virulent septic infection from sloughing and gangrenous wounds, such as are hardly ever met with in England, while a District Surgeon may have *post mortem*s to perform at any time.

If one considers the possibilities of infection which exist in a single unnoticed insect bite, papule, vesicle, or abrasion together with the admitted failure of the most careful disinfection to guarantee an aseptic condition of the hands, the expenditure of Rs. 100 a year on rubber gloves is surely justified.

In India one has also to take into account the fact that a hand which may have been sterile at the commencement, is no longer so after half an hour's free perspiration during an operation.

If our own knee joint was in question, would we not prefer that the operator should wear rubber gloves?

There is a general consensus of opinion among surgeons who use rubber gloves that their results are better, and that their use does not materially diminish manual dexterity. With regard to septic operations, there are two good reasons for wearing gloves. In the first place, no surgeon would willingly do *post mortem* work one day and operate the next, if it could be avoided, and yet his hands are not more infected by a *post mortem* if he had operated in a septic case. A surgeon's hands should never come into contact with septic material, and if rubber gloves were worn at all operations, this risk would be considerably lessened.

In the second place, I would ask any man to look back upon the casualty roll of infection, lifelong disability and death among professional brothers whom he has known personally, and ask himself if freedom from such risks is not cheaply purchased at the cost of a half a crown pair of gloves.

MADRAS,
September 1907

Yours, etc.,
P C GABBETT,
MAJOR, I M S

Discussion is invited—ED, I M S

DR WALLER'S ADDRESS ON THE ACTION OF ANÆSTHETICS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Dr Waller's admissions in his address before the British Association, published in the *British Medical Journal* of the 10th instant, mark a distinct advance in the history of anæsthesia. On the physiological side, Dr Waller says the order in which the effects of chloroform unfold themselves is, first, a suppression of sensation and voluntary movement, then, a suppression of reflex automatic movements, inclusive of the movements of respiration, finally, the heart stops beating. That is to say, in death from chloroform, the heart is the last organ in the body to die. On the clinical side he says, "The doctrine of the Edinburgh school—watch the respiration, not the pulse—was sound doctrine. Stopping of the breathing meant danger, stoppage of the pulse meant death." Obviously, then, to "watch the pulse" under chloroform means death—in exact proportion to the watchfulness.

The doctrine of the Edinburgh school, which is worth quoting in full, if only to ally possible misapprehension regarding Dr Waller's purely imaginary "folded towel drenched with chloroform," was put forward by the late Professor Syme in the following terms:

The points we consider of the greatest importance in the administration of chloroform are, first, a free admixture of air with the vapour of chloroform to insure which a soft porous material, such as a folded towel or handkerchief, is employed, secondly, if this is attended to, the more rapidly

the chloroform is given the better till the effect is produced, and hence we do not stint the quantity of the chloroform. Then—and this is a most important point—we are guided as to the effect not by the circulation, but entirely by the respiration, you never see anybody here with his finger on the pulse while chloroform is given. We use no apparatus whatever, and never continue beyond the point where the patient is fully under the influence of the anæsthetic.

The Hyderabad Commission, for which I still hope His Highness the Nizam will receive the credit which is his due, was formed for the express purpose of determining the reason why the doctrine of the old Edinburgh school, as set forth by Syme, was sound and meant safety. The net result of the experiments which were performed in Hyderabad, in Philadelphia, in Edinburgh, and in Cambridge—all, without exception, paid for by the Nizam—proved the reason to be that chloroform, when given by inhalation, has no direct action upon the heart, and now Dr Waller quotes the interesting experiments and observations of Snow, Grchant, and Buckmaster and Gardner, which show that if Syme's rules are obeyed, and the anæsthetic is not pushed beyond the point where anæsthesia is complete, the percentage of chloroform in the blood is never more than "the anæsthetic amount," that is, it is well within the limits of safety.

Can anyone assert with truth that Syme's principles are not established upon a definite scientific basis? Whether this be conceded or not, the fact remains that if chloroform is given on these principles, brought to perfection as they have been by the brilliant work of Sir Lauder Brunton and Surgeon General Bomford on the Hyderabad Commission, danger and death are alike impossible.

LONDON, W
August 12th, 1907

I am, etc.,
E LAWRIE,
LT COL, I M S (RETD)

CASE OF SNAKE BITE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I was called to treat a snake bite case in the Local Mission Hospital. On arriving I saw a young lad already on the operating table.

On examination, the man had two fang marks on the outer side of right middle finger, the blood was oozing the fang punctures. A light bandage was tied above the wrist on his forearm and a very tight thread was tied eight times round the limb above the wrist joint. The hand was œdematous. The pulse was 76 per minute, breathing was normal, pain was excruciating and the man was very nervous, pupil and eyes were normal, brain was clear to the last. The man was alleged to have been bitten at six in the morning. All this has been tied in the spot and I arrived at 9.30 A.M.

On arrival I made a long longitudinal cut 1½ inches long and deep down to the bone. The pyramargate was rubbed very freely. Several cuts were made on the palm, border of the hand and on its dorsum to give passage to poisoned serum and blood. The hand was kept immersed in a saturated hot-water solution in a bucket. An India rubber cord was tied on about the elbow, and the bandage and thread cords were removed. The patient was given brandy, strychnia, digitalis and hot water to keep up the heart. The exudation went on for about two hours when the cord was removed. The mixture was continued every three hours. The bleeding went on, and at 4 P.M. it was observed that heart had begun to fail, when the limb was elevated and bleeding was stopped by pressure and tincture ferric application. The pulse became very feeble at 8 P.M., and almost perceptible at wrist at 9 P.M., and the man died at 5 A.M., next morning, of blood destruction and heart failure. I send this case for publication.

The variety of the snake is not known, but it is alleged to be about two feet long and thickness of a middle finger. Calcium chloride was given to increase the coagulability of blood.

Milk was given as diet. There was no frothing of the mouth and swallowing was never difficult. The man retained the use of his legs to the very last. In his last moments he perspired very freely. He vomited only once.

FEROZ DIN MOHOOF,

SARGOHDA

Asst Surgeon

Service Notes

At the request of several medical officers we reprint the rules or "conditions" about accelerated promotion to rank of Major which are to be found in the annual list of

'circulars' issued by the Director General a few months ago —

CONDITIONS UNDER WHICH THE PROMOTION OF AN OFFICER OF THE INDIAN MEDICAL SERVICE MAY BE ACCELERATED TO THE RANK OF MAJOR

Circular No 1 C, dated the 14th February 1906, from the Director General, Indian Medical Service, to all Civil Administrative Medical Officers

In continuation of this office letter No 4834-4843, dated 2nd September 1905, I have the honour to request that the attention of all junior officers of the Indian Medical Service may be drawn to the fact that, under the terms of a recent communication from the Government of India, promotion from the rank of captain to that of major may be accelerated by a period of six months only, if satisfactory evidence is forthcoming of an officer—

(a) having passed, while in the rank of captain, a professional examination for a higher degree than any already possessed, or for a special qualification of repute, or

(b) of having pursued a course of serious study in approved subjects for a minimum period of nine months

2 With reference to the first of these conditions, I beg to state that the higher degree of special qualification on which a claim for accelerated promotion can be considered must involve the serious study of an approved subject, or subjects, such as would be calculated to enhance an officer's efficiency in the performance of his duties whether present or prospective, and not merely the acquisition of an academic distinction conferred in natural sequence to an ordinary qualifying degree or diploma, after a more or less formal academic test as in the case of many M D degrees for M B graduates of the same University. An example of the test required is that of F R C S, England, as applied to an M R C S, England, or M R C P, Lond, in the case of the ordinary double diploma

3 These examples are to serve merely as concrete indications of the tests to be exacted, but the proviso previously referred to as to the bearing of the test is a guarantee of increased efficiency in the performance of an officer's ordinary duties would be borne in mind. To an officer whose career will be in the ordinary Civil Department (Civil Surgeon) a higher surgical or medical degree is desirable, to an officer in the Sanitary Department the D P H is indispensable, but if this be already obtained, a period of nine months study in subjects connected with sanitary science in its higher ranges may be substituted. An officer in regimental employment would be expected to obtain a higher surgical or medical degree, or special qualification of repute in one of the special subjects which is calculated to enhance his efficiency in the execution of his duties in peace or war, and here again nine months' study in approved subjects may be substituted when such a course is deemed more desirable. The spirit of the regulations must in all cases be observed viz the promotion of efficiency, in the service of the State, and not the acquisition of purely academic honours

4 As regards the second condition, I beg to state that the nine months' study required must be 'serious' and it must be study of "approved subjects." This does not necessarily mean that the course or courses of study must be previously approved, and officers should be guided by the principle already laid down, that any study they undertake, or any degree they may acquire must have reference to their present or prospective duties and must be of a character calculated to enhance their efficiency in the performance of those duties. Officers who may be in doubt as to the practical application of this principle in their particular cases can always submit their proposals beforehand for advice and direction, though this will not involve a guarantee of accelerated promotion which will depend on the ascertainable results of the study

5 The nine months' study referred to in the preceding paragraph need not necessarily involve nine months on "study leave." Government are of opinion that officers desirous of obtaining accelerated promotion should be prepared to utilize their leave on private affairs if necessary to supplement the "study leave," which is due to them under the rules. This will preclude the necessity of deferring the course of study required until a late period in the rank of captain

In special cases really good and original work carried on in the course of an officer's duties may be taken into account in the consideration of the officer's claims to accelerated promotion, provided it showed evidence that an "approved subject" had been seriously studied, and pursued with results calculated to be of advantage to the State

6 I beg also to state that no officer should apply personally for accelerated promotion. It will be sufficient for all officers who have fulfilled the conditions laid down to submit forthwith the evidence in support for record on their personal files. All such evidence should consist of full details of the nature and extent of the courses of study, with the subjects of study, the dates and particulars as to the Institutions in which they pursued these courses, and these details must be accompanied by certificates from the duly authorized authorities of the Institutions in question. These certificates

or degrees or diplomas should be submitted to this office in original and they will be returned after copies have been recorded

7 In conclusion I beg to add that it is desirable that all Administrative Medical Officers should give their opinions in the annual confidential reports as to the increased efficiency exhibited by officers, and consequently as to the advantage to the State accruing from such courses of study on which a claim to accelerated promotion may be based, paying due regard to the ordinary duties in which the officers concerned are or may be engaged

WE clip the following from the *Medical Press*, (August 7th) —

"The Royal Army Medical Corps Staff have taken possession of the fine new Medical College, with facades to the river, next to the Tate Art Gallery, and Museum in Artillery Street erected by the Government at a cost of £80,000. The lower course of the college is built of grey granite, and the upper stories of brick, with stone dressing. The Grosvenor Road frontage is very imposing, the roof being supported by Ionic columns, resting on a granite portico base, over which is the Royal monogram. There are two blocks: one residential, to accommodate about eighty students, and the other contains the laboratory and museum. The college is equipped on the latest scientific model, and contains lecture and class rooms, reading room, billiard room, and officers' mess and quarters. The building comprises lower and upper ground floors, together with first, second and third floors.

It is expected that the college will become a centre for the study of scientific research and tropical medicine. Students who join the college will be young officers who are already qualified, but they will have to pass an entrance examination. There are two courses, senior and junior, which last respectively six and two months. The senior course will be taken by captains who have returned from their first foreign service and they will undergo at the cost of the Government a special course of Army training by the professors of the college and certain physicians and surgeons of the London hospitals. Lieutenant Colonel H E R James of the Royal Army Medical Corps, is commandant and director of studies. The professors, all of the Royal Army Medical Corps, are—Military surgery, Major C G Spencer, M B, tropical medicine, Lieutenant Colonel R J S Simpson, M B, hygiene, Lieutenant Colonel A M Davies, M A, assistant professor, Major C E P Fowler, pathology, Lieutenant Colonel W B Leishman, M B, assistant professors, Major W S Harrison, M B, and Colonel F J Lambkin. The clinical teachers in medicine are Mr H M Murray, M D, and Mr B P Hawkins, M D, in surgery, Mr G H Makins, C B, and Mr H K Waterhouse, M B, together with seven other teachers in special branches. The college will be ready for the formal opening in the autumn, and it is hoped that the King may be pleased to perform the ceremony

THE following candidates have passed the examinations from May to July, 1907 in the London Tropical School, as usual I M S men head the list —

With Distinction—Captain F H G Hutchinson, I M S, M B, CM (Edin), 1892, DPH, Camb 1907, Captain W S Willmore, I M S, M R C S, L R C P, 1895, Captain J N Walker, I M S, M R C S, L R C P, 1897, A W Balch, Surgeon U S Navy, Ph G (Miss), 1894, M D Harvard, 1898, C A Godson, I M S, M R C S, L R C P, 1904, F Gienier (Colonial Service), M B, CM (Edin), 1891

Ordinary Pass—T R Beale Browne (Colonial Service), M R C S, L R C P, 1901, J C C Ford (Colonial Service), L R C P, and S, L F P, and S (Glas), 1900, G Wilkinson, M B, B C (Camb), T S A, 1892, E Weatherhead, M B (Camb), 1903, M R C S, L R C P, 1903 (Colonial Service)

THE Governor of Bombay in Council is pleased to make the following appointments during the absence on leave of Captain H J R Twigg, I M S, Acting Superintendent, Central Prison, Yeravda, on pending further orders —

Captain C S Lawson, I M S, Superintendent, Central Prison, Ahmedabad, to act as Superintendent, Central Prison, Yeravda

Mr Nasserwanji Rustomji, Jailor, Central Prison, Ahmedabad, to hold charge of the office of Superintendent, Central Prison, Ahmedabad, in addition to his own duties, vice Captain C S Lawson, I M S

THE following transfers and appointments of Civil Surgeons in Bengal are expected —

On return from leave Lieutenant Colonel A H Nott, I M S, returns to Berhampore, and Captain E E Waters, I M S, goes from Berhampore to Cuttack. Major Gwyther, I M S, who has been acting at Cuttack reverts to his old station at Chapra. On the return of Major B Oldham, I M S, from

furlough, he goes back to Patna District, and Major B Deane, I M S, goes to Hazaribagh. On the completion of Major O'Kinealy's tenure of appointment as Civil Surgeon of Darjeeling, in November, Major J T Calvert, I M S, succeeds him at Darjeeling, and Major O'Kinealy, I M S, will probably act as Superintendent of the Medical School, Scaldah, Calcutta, vice Major J C Vaughan, I M S, who proposes to take 3 months privilege leave. When Lieutenant-Colonel Peck, I M S, returns early in November to the Calcutta Medical College, it is expected that Lieutenant Colonel C M Green, F R C S, I M S, will go to Alipore, Calcutta, and Lieutenant-Colonel Harold Brown, M D, get the furlough he has been waiting for.

Lieutenant Colonel Lukis is due out early in November, when Lieutenant Colonel Ditty, I M S, will return to Howrah.

The following changes among Civil Surgeons in the Punjab were notified in September—

Captain J G G Swan, I M S, took charge of Shahpur District, Major W H Ogilvie, I M S, made over charge of the Jhelum District to Lieutenant J F Boyd, I M S. Major Henry Smith, I M S, returned from privilege leave on 19th August to Jullundur.

CONSEQUENT on the retirement of Lieutenant Colonel W Coates, M D, Civil Surgeon, 1st class with effect from the 3rd of July 1907, Major D M Davidson, Officiating Civil Surgeon, 1st class, is confirmed in that appointment from that date.

MAJOR E L PERRY, I M S, officiating Civil Surgeon, 2nd class, whose services have been placed permanently at the disposal of the Government of the Punjab by the Government of India in the Home Department, is confirmed in his appointment, with effect from the 3rd of July 1907, to fill an existing vacancy.

CONSEQUENT on the confirmation of Lt Colonel D M Davidson, Officiating Civil Surgeon, 1st class, in that appointment, Lt Colonel A Coleman I M S, Civil Surgeon, 2nd class, is appointed to officiate as Civil Surgeon, 1st class, with effect from the 3rd of July 1907.

MAJOR W MOLESWORTH, I M S, Surgeon to H E the Governor of Madras, has received an extension of furlough for seven months. He had received 8 months' combined leave and was due out in November 1907.

MAJOR R H ELLIOT, I M S, F R C S, received one month's privilege leave during September last.

CAPTAIN W J NIBLOCK I M S, had obtained in all 2 years' furlough and is therefore due out in Madras on 30th November.

CAPTAIN W C LONG's six months' leave will end on 14th January 1908.

CAPTAIN J P CAMERON, I M S, got six weeks' privilege leave during August-September 1907.

UNDER Articles 233 (1), 260 and 308 (a) of the Civil Service Regulations furlough on medical certificate, combined with such privilege leave as may be due to him for a total period of one year and three months, is granted to Lieutenant Colonel J L Poynder, I M S, Civil Surgeon, Raipur, with effect from the date on which he may avail himself of it. Assistant-Surgeon D O' C Murphy, I S M D, Superintendent, Central Jail Raipur, is appointed to hold charge of the civil medical duties of the Raipur District, in addition to his own duties, during the absence on leave of Lieutenant Colonel Poynder or until further orders.

MAJOR R H MADDOX, I M S, Civil Surgeon, Bengal, has been granted by His Majesty's Secretary of State for India an extension of furlough for ten days.

CAPTAIN M H THORNELEY, I M S, Officiating Civil Surgeon, Darbhanga, is allowed privilege leave, under Article 260 of the Civil Service Regulations, for one month, with effect from the 14th September 1907, or any subsequent date on which he may avail himself of it.

First grade Assistant Surgeon Babu Jogendra Nath Basu, attached to the Bunwar Lal Hospital, Laheria Serai Darbhanga, is appointed temporarily to hold medical charge of the civil station, in addition to his own duties, during the absence on leave of Captain M H Thorneley, I M S, or until further orders.

THE attention of Medical Officers on plague duty is directed to pages 18 and 19 of the *Companion to the Civil Service Regulations* recently issued by the Accountant-General, Bengal. It contains a Synopsis of all recent orders as regard the (scanty) pay and allowances of officers of the medical department deputed to plague duty.

MAJOR J FISHER, I M S, Agency Surgeon, Eastern Rypytana, has been granted one month's privilege leave from 15th September.

CAPTAIN W TARR, I M S, is appointed temporarily as Civil Surgeon of Chittagong.

LIEUTENANT COLONEL F J DEWES, I M S, has received charge of the Civil Surgeoncy of Shwabo District, relieving Major K Prasad, I M S, gone on leave.

MILITARY ASSISTANT SURGEON C D DEJANAY, I S M D, has been transferred to Thirton District as Civil Surgeon.

CAPTAIN L P BRASSFI, M B, I M S, was appointed on 15th July to the Civil Surgeoncy of Bharno, in addition to his other duties.

CAPTAIN E O THURSTON, F R C S, I M S, has been made permanent in Civil employ Bengal, from 10th September 1907, on his return from combined privilege and study leave, he is posted as Civil Surgeon of Bhagalpur.

DR A LINCARD, M B, I M S, late Imperial Bacteriologist, Muktesar, is permitted to retire from 1st September 1907, and Captain J D E Holmes M R C S, D Sc, is appointed in his place.

LIEUTENANT COLONEL HERBERT HERBERT, F R C S, I M S, for nearly 12 years past Ophthalmic Surgeon, Bombay, is permitted to retire from 20th October, and proposes to practise in England. He entered the service in March 1887. He was educated at Leeds Medical School and took the M R C S in 1886. He served in the Zulu Field Force in Arabia in 1890 and took part in the affair of the Husam Zareeba. He had a great reputation on the Bombay side as an Ophthalmologist and contributed much to our columns and to various Ophthalmic Journals.

CAPTAIN T H GLOSTER, I M S, Assistant Plague Medical Officer, Ambrala, was transferred to Simla in the same capacity, with effect from the forenoon of the 29th July 1907.

THE furlough granted to Captain H Ainsworth, I M S, Civil Surgeon, in Notification No 928, dated the 27th of October 1906, has been extended by His Majesty's Secretary of State for India by a period of 7 months and 10 days.

CAPTAIN H AINSWORTH, I M S, Civil Surgeon, has been permitted by His Majesty's Secretary of State for India to convert the period from the 14th of February 1907 to the 26th of July 1907 of the furlough granted to him in notification No 928, dated the 27th of October 1906 and extended by Notification No 728, dated the 7th of September 1907, into study leave.

MILITARY ASSISTANT SURGEON E S BAILLIE, Civil Surgeon, Jhang, has obtained privilege leave of absence for 43 days under Article 260 of the Civil Service Regulations, with effect from the afternoon of the 26th of August 1907.

WITH reference to the notification of the Government of India, in the Home Department, No 193, dated the 2nd of September 1907, Captain J E Clements, I M S, is confirmed in his appointment of Superintendent of a Central Jail, with effect from the 12th of August 1907, to fill an existing vacancy.

MAJOR H B MELVILLE, I M S, while on leave in England, was on study leave for 214 days.

LIEUTENANT COLONEL J B GIBBONS, I M S, Civil Surgeon of Howrah, has been granted four months' extension of leave, that is, up to two years' combined leave, ending 16th February 1908.

MAJOR V G DRAKE BROCKMAN, I M S, has received five months' extension of leave.

CAPTAIN J W HOLMES, I M S, has received six weeks' extension of leave.

LIEUTENANT COLONEL JAMES SCOTT, I M S, has been permitted to retire with effect from 23rd October 1907, he entered the Madras Service in April 1882 and has been on furlough since 23rd November 1906

LIEUTENANT COLONEL A P RUSSELL, I M S, is permitted to retire from 11th October 1907, he entered the Bengal Medical Service in September 1886, and has been for many years a Civil Surgeon in Burma. He has been on leave on medical certificate since August 1905

CAPTAIN J L MAJORIBANKS, M D, D P H, I M S, has been granted privilege leave of absence for two months and thirty days with effect from the 7th September 1907

IN modification of so much of Government Notification No 5297 dated the 28th August 1907, as relates to Captain J L Majoribanks, M D, D P H, I M S, His Excellency the Governor in Council is pleased to make the following appointments —

Captain K V Kukday, I M S, to act as Deputy Sanitary Commissioner for the Western Registration District during the absence on leave of Captain J L Majoribanks, on pending further orders and further to act as Civil Surgeon, Nasik, in addition, from the date of departure of Captain T S Novis, I M S, pending the arrival of Major C T Hudson, I M S

Assistant Surgeon Ramchandia Hanumant Telang, L M S, to act as Civil Surgeon Sholapur, *vice* Captain K V Kukday, I M S, pending further orders

His Excellency the Governor of Bombay in Council is pleased to appoint Major A Hooton, M B, C M, I M S, to act as Deputy Sanitary Commissioner, Central Registration District in addition to his own duties, *vice* Captain G McPherson, M A, M B, C M, I M S, pending further orders

His Excellency the Governor in Council is pleased to appoint Captain G McPherson, M B, I M S, to act as Superintendent of Matheran and *ex officio* Assistant Collector in the Kolaba District from the commencement of the season after the rains, pending further orders

CAPTAIN H A WILLIAMS, B A, M B, D S O, I M S, has been granted an extension of leave (*m c*) for two months

DR J A FOY has been permitted to return to duty in Burma

CAPTAIN T S NOVIS, I M S, has been appointed to act as Professor of Materia Medica in the Grant Medical College, Bombay, *vice* Captain King, granted two years' combined leave

THE following appointments are gazetted —

Captain T S Novis, I M S, to be Resident Surgeon, St George's Hospital, Bombay, *vice* Major A F W King, I M S, proceeding on leave

Captain J L Majoribanks, M D, D P H, I M S, to act as Civil Surgeon, Nasik, in addition to his own duties from the date of departure of Captain T S Novis, I M S, and pending the arrival of Major C T Hudson, I M S

Major C T Hudson, I M S, on relief by Major J B Smith, M B, M Ch, B A (Ireland), I M S, to take up his appointment as Civil Surgeon, Nasik

MISS A M BENSON, M D, First Physician, Pestany Hospital, Kama Hospital for Women and Children, Bombay, is granted privilege leave of absence for three months, with effect from the date of relief

Miss Mary M G Iles, M D, B S (London), is appointed to act as First Physician during the absence of Miss Benson on leave

CAPTAIN W T FINLAYSON, I M S, has joined the Madras Jail Department

CAPTAIN J W LITTLE, I M S, Civil Surgeon, Dera Ismail Khan, is granted privilege leave of absence for six weeks, under Articles 250 and 260 of the Civil Service Regulations, with effect from the forenoon of the 19th August 1907

LIEUTENANT R T WELLS, I M S, assumed charge of the Civil Medical duties of the Dera Ismail Khan District on the forenoon of the 19th of August 1907, relieving Captain J W Little, I M S, granted privilege leave

MAJOR J G HULBERT, I M S, has been appointed Officiating Civil Surgeon of Farrukhabad, U P

CAPTAIN C E SOUTHERN, I M S, District Plague Medical Officer, Jullundur, is transferred to Ludhiana, in the same

capacity, where he assumed charge of his duties on the afternoon of the 1st of August 1907, relieving Pandit Atai Chand

THE undermentioned officers of the Indian Medical Service joined the Punjab for plague duty, on the dates noted against their names, and were posted to the districts indicated as Assistant Plague Medical Officers —

Captain G P T Groube, I M S, —forenoon 8th July 1907, Jullundur

Captain H M H Melhuish, I M S, —forenoon 9th July 1907, Amritsar

Captain M S Iran, I M S, —forenoon 10th July 1907, Jullundur

Lieutenant N M Wilson, I M S, —forenoon 17th July 1907, Jullundur

Captain H Watts, I M S, —forenoon 18th July 1907, Jullundur

THERAPEUTIC NOTES AND PREPARATIONS

WE have already drawn attention to the very useful little book published by THE MELLIN'S FOOD COMPANY FOR INDIA, LD, entitled 'The Care of Infants in India' It contains a very large amount of information of use to young mothers in India, and medical men will be none the worse for a perusal of the little brochure

Another food which has a large vogue now, is the excellent preparation known as Nestle's MILO MALTED FOOD It is of use both for infants and for convalescents, and has been found of great use in case of diarrhoea, taken alternately with milk It seems to be a reliable preparation The Bristol Myers Co of Green Avenue, Brooklyn, N Y, are the manufacturers of an excellent saline laxative called *Sal hepatica* (why not "hepaticus" to be pure in our Latin?) Analysis is published of HOMMEL'S HÆMATOGEN a drug which in certain recent clinical trials has given encouraging results It consists of hæmoglobin and glycerin and is certified by the Institute of Hygiene to be free from poison derivatives, salicylic or benzoic acid, etc The Medical Journals have reported very favourably on this preparation in wasting disease, and it is recommended also in cases of malarial cachexia It is very palatable and on this point it is preferable to Cod Liver Oil

Notice

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BOOKS, REPORTS, &c, RECEIVED —

The Bengal Police Report
Manson's Tropical Diseases (New Edition) Cassell & Co
Jackson's Tropical Diseases Blackson & Co
Nabarro's Tripanosomes, &c Baillière, Tindall & Cox
D J Cunningham's Anatomy Young J Pentland
The Bengal Excise Report.
Agricultural Ledgers
Nature's Hygiene Kinzett. (Third edition) Baillière, Tindall & Cox
Bengal Vaccination Reports
The Hong Kong Medical Report
The Health Officers Report, Bombay

LETTERS, COMMUNICATIONS, RECEIVED FROM —

It Foster Reaney, I M S, Kamptee, Major H Smith, I M S, Jullundur, Lt Col W E Jennings I M S, Bombay, Dr Benthal, Dr Bannerjee Howrah, Major Elliot I M S, Madras Lt Colonel H Herbert, I M S, London Major Birdwood, I M S, London Dr Fink Burma Asst Surgeon DeCruz, Jaypore Major Wall, I M S, Shillong, Capt Moses, I M S, Barisal Capt Davys, I M S, Simla, Capt Megaw, I M S, Calcutta Dr A Pal, Kurseong Capt Brayne, I M S, Rawul Pindi Major G Lamb, I M S, Kasauli, Capt Brierley, I M S, Dr W Hossack, Calcutta

Original Articles.

NOTES ON 26 CASES OF MALTA FEVER IN THE NATIVE OF INDIA

BY W. F. BRAYNE, B.A. (CANTAB.), M.B., CH.B. (EDIN.)
CAPTAIN, I.M.S.

DURING the month of June which is not a malarial month in Rawalpindi, I had 52 cases of fever, mostly slight, in one regiment in this station. In only a few of these cases could I find the malarial parasite. Early in July I had a severe case of undoubted Malta fever (case No 1). This led me to suspect that the cases during the previous month might have been in part slight cases of Malta fever. I therefore started a systematic examination of every case of fever, no matter how slight, and the following series of cases of Malta fever is the result. The following was the procedure adopted. Capsules and films of the blood of the cases were sent to Kasauli and Murree, where agglutination tests for Malta fever and enteric were carried out by Major Lamb, I.M.S., Major Scott, R.A.M.C., and Captain Greig, I.M.S., whom I have to thank for the trouble they have taken. From considerations of space, a table of the positive blood agglutination results with the dilutions in which obtained is given after the description of the cases. In the descriptions of the cases only the most noticeable features are mentioned. In all cases a careful and repeated examination failed to reveal any other disease, special care being taken to exclude tubercle. Where organs are not specially mentioned, they were found to be normal.

CASE 1—Sikh, aged 20. This case was the first of the series, and throughout it ran the course of a typical severe enteric. The spleen was palpable, hard and painless. The tendency to hyperpyrexia was the most noticeable feature of the case, the patient being sponged frequently to reduce temperature. The sweating was, I think, the most profuse I have ever seen. There was a tendency to constipation throughout, which was met by soap and turpentine enemata. The heart was affected early, and the pulse throughout was rapid, weak and irregular. Later on the heart was dilated, and before he died the left border was $\frac{1}{2}$ inch outside the nipple line and the right border was also just to the right of the sternum. The abdominal reflex was absent.

He died on the 18th day and a limited *post mortem* was done. The spleen was enlarged and very hard. On inspection of the small intestine four or five paralytic dilatations were seen. On opening the gut, congestion was noticed in patches corresponding to the dilatations, the congestion being most intense round the Peyer's patches. There was a large fresh hæmorrhage in the small intestine, which had evidently come from one of the Peyer's patches. On examination of the Peyer's patches only a slight ulceration was noticed, and after three hours soaking in Hyd perchlor solution they appeared to be normal. There was also some slight ulceration of the upper part of the large gut. The weather was unfortunately very hot and the spleen became putrid on the way to Kasauli, and the gut could not be preserved.

This case then though clinically a typical enteric was really a Malta fever as shown by the reactions and by the absence of typhoid ulcers in the gut.

CASE 2—Sikh, aged 20. This case was clinically a typical enteric, and was diagnosed as such before the blood result was received. Patient had no pain in joints or limbs. The sweating was extremely profuse. He was twice sponged on the 11th and 12th day to reduce temperature. About this time his condition was critical due to threatened heart failure. After the remittent fever stopped and it became intermittent, his condition was much better. His spleen was not palpable. The anaemia was marked and developed early.

Patient during the last one and a half years has had three slight attacks of fever, the longest lasting six days. Patient had noticed some weakness before admission following a day's fever he had two weeks previously.

CASE 3—Sikh, aged 22. This case was a severe intermittent fever lasting for 32 days. The special feature of the case was the fact that for about a week beginning from the 12th day he had diarrhoea, the stools somewhat resembling those of an enteric case. Very profuse sweating was noticed all through the course of the fever. His spleen was the same hard spleen described in the other cases. Some anaemia was present. Patient was quite fit up to the time of his admission, and in the last three and a half years had only had three days fever in 1906. His pulse rate was somewhat rapid towards the end of the fever, being 112 the last day.

CASE 4—This case is a series of small febrile attacks with apyrexial periods, and illustrates how closely these cases may approximate to malaria clinically. His spleen is hard and just palpable as in the other cases. No joint or other symptoms of interest were seen except profuse sweating. His pulse during even the periods of apyrexia was running above 100 at times, but there was no dilatation of the heart. It will be noted in the table that no malarial parasites were found.

CASE 5—Sikh, aged 31. This case is interesting as shewing two periods of apyrexia of seven and six days each. He has the same hard painless spleen just palpable. He had profuse sweating but no other symptoms of interest. This case at the end developed an intercurrent malaria. *Benign tertian* parasites being found on the 47th day. They were not found on admission. He was quite fit up to the first day of the disease. Patient had had no fever for sometime previously.

CASE 6—Sikh, aged 19. This case is one of the slightest of the series, and presents no features of interest other than the extreme shortness of the febrile attack, and the fact that no recurrence has occurred. No splenic enlargement was seen. He had 11 days similar fever during the previous month.

CASE 7—Sikh. This case shews irregular fever lasting for 46 days. His spleen was not palpable and his heart was not much affected. The only noticeable feature was the great anaemia. Sweating was profuse. Patient had seven days fever in June, and two slight attacks of fever last year. Patient was feeling fit up to the first day of fever.

CASE 8—P.M., aged 35. This case is the same slight type as No 5. Patient has had no fever previously for two years. It is almost an ambulatory case as he was discharged feeling quite well soon after. His blood gave a slight positive Widal at Murree on the 15th day after he had been normal for ten days. His blood twice gave a positive result with M. *Melitensis*.

CASE 9—Sikh, aged 25. This case is merely an irregular fever lasting nine days, with a slight five days fever on the 21st day. He had profuse sweating. His spleen was not palpable and no anaemia was present. His pulse rate rose to 112 but the beat was fairly strong. Patient had some malaise and constipation for six days before the fever. He has had no fever since 1901.

CASE 10—Sikh, aged 19 This is an irregular intermittent fever with a short remittent period lasting in all 25 days, with some low fever since Sweating was a very marked symptom He has been much pulled down by the fever and is very weak His pulse on the 38th day, when the temperature was normal, was running between 80 and 100 He has the same hard spleen as the others He had seven days fever in July, but was feeling quite fit before admission

CASE 11—Sikh, aged 42 This case has few features of interest He had fever for 18 days, which affected the heart so much that after he had been practically normal for 13 days, his pulse rate was generally over 100 and on the slightest exertion ran up much higher His spleen was not palpable Sweating was profuse His heart was slightly dilated He has had no fever previously since 1892

CASE 12—Sikh, aged 20 This case was not under my care, but I was asked to examine him, and found him very anæmic with the same spleen as was seen in many of the other cases He was delirious from the 19th to the 25th day, and was one of the most serious in the series He had had no fever before during the present year

CASE 13—Sikh woman, aged about 34 This case, a woman had fever for about two weeks I was not allowed to examine her Her blood gave a reaction 1 in 80 to M. Melitensis and a negative Widal On being told this result her husband took her away to his village

CASE 14—Sikh, aged 28 This is the only one of the series in which a typical joint complication was seen Patient's temperature was normal on the 6th day On the 9th it rose to 103° and he complained of severe pain in his right knee, which was found to be red and swollen The joint continued inflamed, and on the 12th day there was definitely fluid in the joint After this the pain and swelling rapidly declined, until on the 14th day the joint was normal except for slight pain, which soon disappeared His temperature fell synchronously with the decline of the pain and fluid in the joint Profuse sweating was noticed throughout His spleen was similar to the other cases His heart was not affected He was quite fit up to the date of the beginning of the fever, and has had no fever for the last 13 years

CASE 15—Sikh, aged 17 This case shows a small initial rise followed by a period of low fever On the 11th day high remittent fever began which lasted till the 25th Since which up till to day, 35th day, he has had intermittent fever The special feature of this case is the way the heart was affected The pulse rate in the fifth week was rarely below 120 and often 136 The patient is very seriously ill now and the issue is still doubtful The sweating in this case was so severe, that his whole bedding was soaked with it The patient has the same hard spleen as the other cases The patient is too ill to enquire into his previous history

CASE 16—Sikh This case was not under my care, so I am unable to give details concerning it He has had considerable diarrhoea of an offensive type His spleen is the same as described in several other cases

CASE 17—Sikh, aged 18 This case was not under my care and I know nothing beyond the fact of the reactions his blood gave, and am unable to give an explanation

CASE 18—Sikh, aged 36 This case was admitted on 8th August for anæmia and debility He gave the following history He went on two months' leave on 8th June to his village After being there three weeks, he had severe continuous fever for 14 days which confined him to his bed This was followed by an irregular fever with evening rise for 22 days, when the fever left him He has had no fever since admission His spleen is not palpable No malarial parasites were found on two occasions when they were searched for Patient had quinine for the first two days only of the fever in his village

He had fever for five days three months before admission and before this had been healthy for years The patient has had no fever since admission

CASE 19—Sikh woman, about 35 This case, a woman, was admitted in a dying condition two days before death She was unconscious when admitted There were sordes on the lips and gums and there was considerable oedema of the lungs She had had fever for three weeks previously Sweating was very profuse indeed The heart was somewhat dilated and very weak No pneumonia or phthisis were present No post mortem was allowed

CASE 20—Sikh aged 18 This case presents no symptom of interest except profuse sweating The pulse rate averaged 90 He has had no fever during the previous year He felt absolutely well until the first day of fever His heart is slightly dilated The spleen is not palpable The patient still has fever

CASE 21—Sikh, aged 30 This case had a high remittent fever lasting for 14 days, when it suddenly came down to normal He has not been in long enough for me to be able to say whether he is going to develop the intermittent fever seen in the other cases Two days before admission he began to have pain in both knees and ankles This was severe on admission and lasted about a week There was no fluid in the joints His spleen was enlarged and slightly tender Sweating was profuse He has had no fever since 1897 His heart was normal

CASE 22—Sikh, aged 18 This case shows merely a slight fever reaching normal on the ninth day He has the same spleen as the other cases, but no other symptoms Up to the time of this fever he was quite fit and had had no fever for one and a half year

CASE 23—Sikh, aged 32 This is an ambulatory case and if he had not been my orderly, and so come under notice, he would not have come to hospital at all He had been feeling ill for 13 days before he had fever and after this he had slight fever for ten days when I saw him and sent him to hospital He says that he had profuse sweating with the fever He is now slightly anæmic and looks weak and ill He has the same spleen as the other cases He has only had two days fever since 1897

TABLE OF BLOOD EXAMINATION

1	7th day Kasauli M M + 1 in 160 B T neg Malaria neg	14th day Kasauli M M + 1 in 160 B T neg	
2	8th day Kasauli M M + 1 in 160— trace 1 in 320 B T neg Malaria neg	15th day Kasauli M M + 1 in 40 B T neg Malaria neg	40th day Murree M M + 1 in 50, 1 in 100, 1 in 200 B T neg
3	9th day Kasauli M M + 1 in 40 B T neg Malaria neg	31st day Murree M M + 1 in 50 B T neg	
4	12th day Kasauli M M + 1 in 40 Malaria neg	37th day Murree M M + 1 in 100 B T neg	
5	7th day Kasauli M M + 1 in 40 Malaria neg	32nd day Murree M M & B T neg	47th day Kasauli M M + 1 in 80 B T neg No malarial parasites scanty
6	1st day Kasauli M M + 1 in 80 B T neg Malaria neg	19th day Murree M M + 1 in 100 B T neg	
7	1st day Kasauli M M + 1 in 80 B T neg Malaria neg	21st day Murree M M + 1 in 200 B T neg	
8	4th day Kasauli M M + 1 in 40	15th day Murree M M + 1 in 200 B T + 1 in 40	

PHYSICAL EXAMINATION—(Contd)

Date blood draw	Examination	Result
15th day Murree	M M + 1 in 200 B T neg	
16th day Murree	M M + 1 in 100 B T neg	
13th day Murree	M M + 1 in 200 B T neg	
29th day Kasauli	M M + 1 in 40	
29th day Kasauli	M M + 1 in 40 B T neg Malaria neg	
30th day Kasauli	M M + 1 in 40 B T neg Malaria neg	
24th day Kasauli	M M + 1 in 80 B T neg	
19 days after end of fever Murree	M M + 1 in 100, 1 in 200 slight B T neg	18 days later Kasauli M M + 1 in 40 B T neg Malaria neg
4th week Kasauli	M M + 1 in 80	4 days later Kasauli M M + 1 in 80 B T neg
9th day Kasauli	M M + 1 in 80 B T neg Malaria neg	
3rd day Kasauli	M M + 1 in 80 B T neg Malaria neg	
3rd day Kasauli	M M + 1 in 40 B T neg Malaria neg	
7th day Kasauli	M M + 1 in 40 B T neg Malaria neg	

men and of men suffering from known diseases, febrile and otherwise, were sent at each time together with the bloods of the suspected cases. A total of 73 cases were examined. Of these 11 were healthy men and 16 were men suffering from known diseases, viz—

- 8 Malaria—Benign tertian parasites found
- 2 Enterics—Positive Widal twice in one case and once in the other
- 1 Acute dysentery Died and a *post-mortem* done

1 Double pleurisy with continued high fever for three weeks

- 1 Wound
- 1 Herpes zoster
- 2 Cases with spleen and no fever

Of these 27 cases not one gave a positive reaction with M. Melitensis. I think this is good evidence of the trustworthiness of the agglutination tests—otherwise surely one of these controls, some of whom were suffering from febrile diseases, must have given a positive result with M. Melitensis.

Twenty other cases were from men suffering from fevers of short duration, clinically malaria and yielding to quinine, but in whose blood no parasites were detected, probably owing to the fact that they had been taking quinine before their blood was examined. Twelve of these fevers lasted between one and two days and the longest lasted six. They were all discharged to duty feeling quite fit, and, in my opinion, these cases were malaria.

The remaining 23 cases were all positive and are those described before. Of these 23 cases two were tested three times and gave a positive reaction on each occasion, fourteen were tested twice and gave a positive reaction on both occasions, while six were tested once and gave positive reactions. The remaining case, No. 5, was tested three times and gave positive reactions twice and a negative once.

The question as to whether the fever described was the actual Malta fever itself, or whether the patients had previously suffered from Malta fever, and the present febrile attack might be something else, while the agglutinins from the previous attack caused a positive result with M. Melitensis to be obtained is, I think, settled by the fact that the majority of the cases had had no fever for some considerable time before the present attack.

On enquiry it was found that the men of the regiment from which these cases came were in the habit of drinking large quantities of goat's milk, between 150 and 200 goats coming into the lines every morning and evening to be milked. This milk was either drunk raw or in tepid tea.

Of the 23 cases of the series 15 admit to drinking the milk, but unfortunately the question was not put to all the patients. Thirty-nine goats were isolated for inspection and their

"M M + 1 in 80" means that a positive agglutination with *Micrococcus Melitensis* was obtained in a dilution of 1 in 80 no higher dilution was put up
"B T" means that the Widal Reaction for Enteric was tried

The first question of interest is naturally, whether these agglutination reactions are reliable or not. Major Lamb, I.M.S., writes me that he considers that a positive reaction as obtained at Kasauli is positive proof either (a) that the patient has Malta fever or (b) that he has suffered from it recently.

With a view, however, of further eliminating any possibility of error, the bloods of healthy

blood sent to Kasauli, eleven of these gave a positive result with *M. Melitensis*

I had intended to take cultures from the spleen of some of the cases, but, owing to the fact that I have no laboratory and the difficulty of sending the tubes as far as Kasauli by post in the hot weather, this has up to now been impossible. A change of station, which compels me to close the investigation, will unfortunately prevent me doing this during the ensuing cold weather. Even in the absence of splenic cultures, however, I consider the results obtained to be absolutely conclusive.

From the above cases it will be seen that Malta fever in the native of India may be an irregular fever lasting any time from one week to two months. To attempt to divide it into types is difficult, but it will be noticed that there is a tendency in the severer cases for the fever to be of a high continued or remittent type for two weeks or so and, if the patient lives, to then assume an intermittent character. There is a great tendency towards the rapid development of anæmia. The heart is in some cases severely affected, dilatation having been noticed in several cases. A peculiarity also is that, later in the disease, the pulse appears to bear no relation to temperature, a weak dicrotic pulse of 108 being often seen with a practically normal temperature, while perhaps half an hour later the rate will have fallen to 60.

The sweating in these cases is perhaps the most characteristic sign, and is, I think, the most profuse I have ever seen. These patients have a characteristic smell which has been noticed by all who have seen them. It was so strong that, on walking down the corridor outside the hospital, one could tell when one was opposite the Malta fever ward by the odour. The next ward containing some 15 malaria cases as well as other patients was entirely free from this smell.

The spleen also is somewhat characteristic. In the majority of cases it was just palpable, very hard and, if tender, very slightly so. Unfortunately the only spleen obtained *post-mortem* became putrid before examination. It was so hard that it reminded me of a spleen hardened in formalin, although the *post-mortem* was done within half an hour of death.

The fever appears to come on abruptly without any previous malaise.

In two cases only did any joint symptom occur (Nos 14 and 25), so that this does not seem to be a common symptom.

It will be seen that these cases depart in many particulars from the classic type met with in the Mediterranean. The absence of joint symptoms, the irregular temperature and the great variation in severity seem to point to the fact that Malta fever in the native of India is a different disease clinically from that described in the text books.

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Dec, 1907]

TABLE OF BLOOD

9	9th day Kasauli
	M M + 1 in 80
	B T neg
10	10th day Kasauli
	M M + 1 in 80
	B T neg
11	8th day Kasauli
	M M + 1 in 80
	B T neg
12	15th day Kasauli
	M M + 1 in 80
	B T neg
13	About 16th day Kasauli
	M M + 1 in 80
	B T neg
14	8th day Kasauli
	M M + 1 in 80
	B T neg

Note

In connection with the 36th & supplying m Pasteur Institute, the 5th September 1907, reaction to m m in a dilution of 1-80 on the 14th September 1907, the bloods of 19 more goats were tested, of which 7 showed a positive reaction. The medical officer of the Regiment then sent to Kasauli two of the goats, the blood of which had shown the reaction, with the object of isolating m m from their blood or milk.

The following technique was adopted :-

Daily for the first week, 5 cc of blood was drawn aseptically from each goat from the jugular vein 25 cc being planted in flasks containing 150 cc sterile broth, and incubated at 37°C. The remainder of the blood was set aside for the agglutination test. Milk was also drawn daily, in as aseptic a manner as possible from both goats. Within 10 minutes of milking, 2 or 3 drops were placed on a nutrose agar plate and spread with a sterile L shaped rod. The plates were incubated at 37°C.

From the 8th to the 14th days, instead of the pure milk being planted out, a small quantity was centrifuged, and the deposit planted out as above. The broth flasks were incubated for a period of 5-7 days and then a few drops were spread out on Nutrose Agar plates.

All the plates were incubated for 5 days, and then examined for likely colonies. If any were found the following tests were applied :-

- (1) Appearance of growth on agar
- (2) Microscopical appearances
- (3) Staining properties
- (4) Agglutination with a known highly agglutinating serum

The following results were obtained :-

No 1 Goat

Serum reaction to m m	Positive 1-80 on every occasion
Zammit's Test	negative
Culture from blood	m m recovered on 5 occasions
Culture from milk	negative

No 2 Goat

Serum reaction to m m	Doubtful reaction in 1-20
Zammit's test	Negative
Culture from blood	Negative
Culture from milk	Negative

* "This serum was obtained by inoculating a rabbit intraperitoneally with an agar sludge of a known laboratory culture of m m. On sixth day after inoculation the serum of this rabbit agglutinated the stock laboratory emulsion on m m, in a dilution of 1-80."

The following Table shows the results with No 1 Goat —

The following Table shows the results						
Date blood drawn	No of days incubated	Date planted on nut agar plates	Result	Serum reaction	Zanetti's test	REMARKS
1 10 07	5	6 10 07	Contaminated	+ 80 m m	Negative	The colonies of m m recovered had the characteristic appearance, the micrococcus was decolorised by Gram's Stain, and was agglutinated when put up with the rabbit's serum in a dilution of 1-640
2 10 07	5	7 10 07	No growth	+ 80 m m		
3 10 07	7	10 10 07	Do	+ 80 m m		
4 10 07	5	9 10 07	M m recovered	+ 80 m m		
5 10 07	6	11 10 07	No growth	+ 80 m m		
6 10 07	6	12 10 07	Do	Not done		
7 10 07	5	12 10 07	m m recovered			
14 10 07	5	19 10 07	No growth			
15 10 07	5	19 10 07	m m recovered			
16 10 07	5	21 10 07	m m recovered			
17 10 07	5	22 10 07	m m recovered			

SOME CLINICAL OBSERVATIONS ON RELAPSING FEVER

BY E. LANDON, M.B.,

Nasik

THOUGH Relapsing fever seems to be endemic in W India, it is not often that an epidemic occurs under such circumstances that it can be watched from beginning to end, and the obscurity which still shrouds its pathology and epidemiology, no less than the variety and severity of its manifestations, make it of such interest that it seems worth while to record a few notes on an outbreak which occurred this monsoon in Nasik.

While there seem from native reports to have been a few cases of Relapsing fever in the city, earlier in the summer these did not come under the observation of the medical officers, then in July the disease broke out with great violence in the schools of the C. M. S., situated with several industrial workshops and missionaries' houses, etc., alongside of the Christian village of Sharanpur, over a mile from the city. The settlement attacked consists of numerous small buildings, boarding schools for boys and girls, normal school, kitchens, hospital, printing press and so forth, scattered about a breezy open maidan, and at first sight it would seem to be the last place for a disease of this nature to flourish in. Having once gained a footing, however, in the boys' school, it raged until every child in the school had been attacked, and it had spread to the girls and the apprentices. From its first appearance on July 12th to September 3rd, when I gave up my visits—there being then only a small remnant left—there had come under my observation about 200 cases.

The first I saw, were six boys of the Middle school, suffering from fever, the temperatures ranged from 101° to 104° , there were no special symptoms, except in one case epistaxis. They were being treated by the compounder with purgatives and quinine, and I thought but lightly of the matter. Two days later, I was asked to go over and see 14 more boys, who had developed fever, accompanied by bilious

vomiting and abdominal pain. I found them with temperatures of 102° to 104° , severe headache, and in several instances jaundice of the conjunctivæ. Not having met with Relapsing fever before, and knowing nothing of its presence in the town, the nature of the disease before me did not then occur to my mind, and my first investigations were directed to the school kitchens. As in several of the cases the temperature had by now fallen to normal, this was looked upon as the result of quinine, I may say, however, that investigation showed that these boys had already had fever for several days, before I saw them, so that the drop of the temperature was—had I but known it, merely the typical crisis of Relapsing fever. As soon as the boys were free from fever, they were returned to the school by the authorities, and several in this way passed away from observation, until a week later, a relapse brought them back. The unskilled attendants could not keep records of even those patients who were in the little hospital, and for a time I had to be content with what I saw on my visits later, a trained nurse was obtained, but the numbers and other difficulties made the keeping of charts impossible.

In spite of the fact that the patients were removed to the hospital at once, the fever spread rapidly through the school, and by the end of the month there were 53 boys, about half a dozen girls and several attendants ill. The large boys' school was given up as a hospital for the boys and men, the girls were nursed in their own sick ward—isolated from the rest of the school, and the boys who were still well were transferred to a building about 350 yards away. Still the epidemic spread, owing no doubt to the traffic of servants, patients' friends and helpers between the different buildings, which it was found impossible to prevent.

Blood films were kindly examined by Captain Marjombanks and Captain Novis, I.M.S., with negative results, owing as we found later to deterioration of the stains, and it was not till the course of the disease in individual cases had been watched for a fortnight, that the diagnosis

became clear. Films were at the same time sent to the Parel Laboratory, where the spirillum was readily found by the pathologists.

Some description of the individual symptoms may be of interest. All the cases conformed more or less to the "ordinary type" of Relapsing Fever, in contradistinction to the "bilious-typus" variety described by Dr McCowen in his account of an epidemic that occurred last year (*Indian Medical Gazette*, January 1907). The majority of the patients suffered from little besides the pyrexia with its concomitant evils of thirst, general pains, and headache. Some however showed special symptoms, which called for particular treatment.

Pyrexia—The temperature usually rose abruptly, to 101° or 102° , on the evening of the first day, and with slight morning remissions continued to rise slightly till it reached 104° to 105° on the sixth or seventh day. Then, when the patient felt most ill, quite suddenly perspiration set in, the temperature fell rapidly, all the symptoms disappeared, and in a few hours the patient complained of nothing but a sense of weakness. If at this stage the temperature were taken, it was usually between 96° and 97° , but in some cases it was as low as 95° . The prostration following the crisis in these severe cases, was intense, necessitating very active measures to prevent entire collapse. The perspiration was copious, and continued for some hours. The relapse, which occurred from 5 to 10 days later, was often as severe, and in some cases more severe than the first attack; one patient, an English lady, who contracted the disease while helping to nurse the children, had on the fourth day of her first relapse a rigor and a temperature of 105.4 at 4 P.M., by midnight the thermometer registered 96.4° , and at midday following, the temperature was again 105.2° , and a severe rigor accompanied the rise. The temperature persistently remained subnormal, in most cases for about a week, in several instances all treatment and stimulants, frequent nourishment, hot bottles, etc., failed to raise the temperature above 95° for two days.

Pain—Headache was severe in every case, some patients had no other pain, but the majority suffered severely from aching of back and limbs. In a few cases pain was referred to the knees, but no morbid condition of the joints was detected. Abdominal pain was quite a feature of the severer cases, and was not always referable either to tympanitis or to enlarged liver or spleen. Enlargement of these organs was remarkably rare, I only observed it in about five cases. The flatulent distension of the stomach and bowels met with, yielded in every case to appropriate treatment, but when the above conditions had been eliminated, there remained still a few cases, certainly, in which I could not account satisfactorily for the severe pain present. One of these, a boy, passed a large tapeworm, but as he was then unconscious, and

shortly afterwards expired, one cannot be sure that this was responsible for the pain. Two young women suffered from acute pain and tenderness in the lower abdomen, particularly in the right iliac fossa, so definite was it that one was tempted to diagnose appendicular or ovarian mischief. Vaginal examination revealed nothing of note, opium allayed the pain, and when the fever had departed, this symptom also entirely disappeared.

Vomiting—The early cases were characterized by vomiting, epigastric pain, and jaundice of the conjunctivæ. The vomit was bilious, and often persisted for a whole day. The jaundice was deep in a few instances and remained more or less through the whole course of the disease, but was only seen in the conjunctivæ. In the latter half of the epidemic, vomiting was the exception rather than the rule, but when it did occur, it was hard to check. Rectal feeding was resorted to in a few instances, with good effect. In this connection, I may mention that I found the raw white of an egg, mixed with a little cold water and a pinch of salt of great service. Even when hot water soda and bismuth and other drugs were rejected, this "albumen water" was retained and if repeated two or three times at intervals of two hours, often re-established tolerance, and tided the patient over a critical time. This is specially useful for small children, and where lack of skilled nurses makes rectal feeding difficult to carry out.

Diarrhœa—Diarrhœa occurred four times, in each case it was dysenteric in type. Three of these yielded to treatment (Pulv. Ipecac. Co. and Bismuth in doses regulated according to the age of the patient, two hourly), the fourth was that of a woman who had initial stenosis and congestion of the pulmonary bases, and who succumbed. In her case the stools lost their dysenteric character and became green and fetid. This patient was not brought into hospital till the crisis of her relapse.

Respiratory System—Respiratory complications were rare in this epidemic, a few children had coughs for a short period, which disappeared with the subsidence of the fever. One patient, the native trained nurse who contracted the disease while on duty, developed pneumonia on the eighth day, and quickly succumbed—a life truly sacrificed to duty.

Nervous System—In the nervous system, various abnormal conditions were observed. Two patients developed slight peripheral neuritis—one in the hands, the other—a somewhat floundering mal—in the calves of the legs. This symptom disappeared shortly after the crisis, and recurred in the relapse. Partial deafness occurred in at least two cases, and in the one under observation at the date of writing, still persists a fortnight after the third crisis. One young man lost his voice entirely at the height of the fever and recovered it only when convalescence was established. Delirium was usual,

CLINICAL OBSERVATIONS ON RELAPSING FEVER

By E LONDON, M B

Nash.

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INITIAL FEVER

Fahrenheit Scale

some cases being of the noisy type, during the febrile stage, others of the quiet wandering description, some patients showed both at different periods. One youth, after passing a quiet night, towards dawn endeavoured to throw himself out of a high window. His efforts were frustrated by crossed bars, between which he wedged himself and so violent was he that it was with difficulty that he was extricated.

From the point of view of treatment, the circulatory system is the most important. In almost every case, heart failure was the cause of death. The pulse was invariably of low tension, often remarkably so, even where strychnine and digitalis had been administered throughout. With this there went a certain tonelessness of the cardiac sounds, though I did not, in most cases, find any enlargement of the heart. In three cases there was a marked mitral systolic murmur, but after careful observation I concluded that in each case there had been previous endocarditis, and that the murmur owed little, if anything, to the Relapsing fever.

In the treatment of heart failure, Adrenalin Chloride had good effect, and acted more quickly than Strychnine, unfortunately I did not know the value of this drug till near the end of the epidemic, when I began using it on the advice of Dr. Choksey of Bombay. It can be given in the 1:1,000 solution as sold, in doses of 5 to 30 min., but in less urgent cases I found in 10 of a 1:5,000 solution every four hours reform a soft fluttering pulse in a remarkable manner.

Conjunctivitis.—It has been stated that ophthalmia is of common occurrence in Relapsing fever. In the cases under my care, only two showed slight conjunctivitis, which yielded to the prompt application of Ag N O₃. One severe case developed, at the end of the epidemic, after I had given up charge. No definite rash was observed, but in two instances a transient hyperæmic mottling appeared. Epistaxis occurred in about half a dozen cases, but at no time was it severe. It was observed twice or thrice in the same individual shortly before the crisis.

In several young women menstruation was advanced by a few days, and the only patient who was pregnant at the time was prematurely delivered.

No picture of Relapsing fever is complete without mention of the urine, which from the outset was concentrated and of a peculiar dusky hue, almost smoky, and reminding one of both bile-stained and blood-stained urine, yet differing from each. In the cases which exhibited jaundice one would expect to find bile, but this peculiar tint of the urine was present in all cases. Unfortunately, lacking the reagents and apparatus I was unable to analyse the urine completely, so can give no idea of the metabolism of the tissues, and cannot suggest the origin of the colouration. I am not aware whether this subject has been investigated, and shall be glad to learn through your columns of any results

that have been attained. The life history of the spiroillum, its habitat within the body, and its effect upon the tissues are still unknown, and each line of investigation offers a chance of light.

A few patients complained of swelling and tenderness of the submaxillary glands, or of the tonsils, but no other glands were found to be enlarged.

The cause of this outbreak still remains obscure, and it is difficult to find an adequate reason for its rapid spread, and the firm hold it obtained upon the schools. The theory that relapsing fever depends upon want, dirt and overcrowding does not satisfy all counts in this case. For the children are well fed, and though the sleeping accommodation is somewhat limited, by day the children lead an active open air life. A certain standard of cleanliness is exacted by the authorities, far surpassing that which obtains in native communities away from European supervision.

The probability seems to be that the first case occurred in the Christian village, and the infection was, by contact, introduced into the Boys' Middle School. Segregation was carried out so far as was possible, but all who have practised in this country will realize how impossible it was to prevent curious or sympathetic friends from visiting the wards. In considering the method of communication of the disease, the outstanding fact which recurs to one's mind, is the presence of pediculi vestimentorum in vast numbers, in the garments and bedding of the boys. Vermin of sorts are always present in native dwellings, and the sight of pediculi capitis, and the ordinary bugs is so much the rule as to excite no remark.

In the present instance, both these insects were seen, but far outnumbering them were the lice, of which there must have been millions. They were not very noticeable at first, but when the patients numbered twenty or thirty, the lice could not be ignored. I am told that in native circles the disease is called the Lice Plague, and it was reported to me that natives of experience said, that this particular fever produces lice! Evidently there is some vital relation—to the native mind—between lice and Relapsing fever. One could not but observe that in the boys' school where lice abounded the disease was rapidly communicated to the contacts, and that in the girls' school where lice were not found, even after search had been made the epidemic proceeded very slowly, only 30 girls out of a school of 118, having been attacked after five weeks. I make these observations as no picture of this outbreak would be complete without them, but I leave the further working out of the part played by the lice in conveying the disease to the pathologists who are giving their attention to this matter.

I append the chart of one case which varied slightly from the type, showing the characteristic rapid drop of temperature.

The patient was a child of four, and was an inmate of the Dhaukora Hospital. She showed no symptoms save the pyrexia, the low tension pulse, and the tendency to collapse at the crisis. The great range of temperature exhibited in the second relapse is unusual, even in this fever.

SIXTY ONE EYE OPERATIONS IN ONE DAY.

By HARRY GIDNEY, F.R.C.S. (E), D.P.H. (CAMB)

CAPT., I.M.S.

IN publishing this series I have no desire whatever to put myself forward as a record breaker, though, I believe, I am quite correct in stating that 61 operations in one single day is a world's record for a day's work. My desire is to take advantage of your columns in replying to the many letters of enquiry which I have received from several members of the service and others asking me for information on the various details in connection with eye surgery in the mofussil. I would remark that 61 operations in one single day is not the ordinary day's work of surgery which I.M.S. Officers enjoy in E.B. and Assam, far from it, 4 or 5 cases are the very most one gets. I have been more fortunate for I have within the last three months performed as many as 32, 27, and 31 cataracts on separate days. These 61 operations consisted of the following—

Extraction of Senile Cataracts	52
" " Congenital "	6
Iridectomy	2
Pterygium	1
Total	61

No very special arrangements were made by me to collect these cases. All I did was to ask the Assistant-Surgeon in charge of the Hospital at Puthia, and the Police Sub-Inspector, to try and collect as many blind people as they could and when they had done so, to send me a wire at head-quarters and I would fix a day and go down and operate. "Puthia" is a very small place, 20 miles from Rampur Boalia, and has no claim, more than any other part of E.B. and Assam, to be considered as a cataract-producing area, in fact, before this field day of mine, not a single cataract had been operated on in this place, except on two previous occasions by me. It was on the 25th September last, that I did these operations. I started operating at 8 A.M. and continued to 1.45 P.M., then had lunch and operated again from 2.15 P.M. to 4 P.M., when (the day being a cloudy one) the light failed. Had the light remained I could have performed nearly 100 operations. When I arrived at this place, I found about 250 blind people waiting for me, mostly villagers. Out of this number at least 100 of them had been operated on by that well-known destroyer of eyes, *ie.*, the "rawal," or village eye-quack. Most of these eyes were destroyed beyond repair. The remaining cases

I examined casually, and selected about 100 as being suitable for operation. Whilst my assistants were getting everything ready, I again examined these 100 selected cases, looking into each and every one more carefully. By "more carefully" I do not mean in the dark room, with an ophthalmoscope, for I had no dark room, and, moreover, if there was one, I had no time to do this, much as I consider it necessary. In the mofussil one has to act very differently to our more fortunate colleagues in charge of Presidency Eye Hospitals, who can pick and choose their cases after a very careful examination. My tests, when in the mofussil as to the suitability or otherwise of an eye for an operation, are the following—

(1) The cataract must be mature or all but mature.

(2) The tension must be normal or very nearly so.

(3) The lachrymal sac *must* be healthy.

(4) The pupil must react to light and darkness, this is ascertained by covering and uncovering the eye with the hand, and this is repeated three or four times, to make quite sure of it.

(5) If possible, a healthy conjunctiva.

(6) Chronic bronchitic and asthmatic cases are not operated on unless absolute rest after the operation is assured.

(7) Very marked anæmic cases are not operated on.

These seven tests are quite enough for me, and, before I operate on a case, the eye must answer all these tests. When the conjunctiva is not quite healthy, antiseptics are more liberally used. Again in those cases in which the tension is slightly above normal, I never use the eye speculum, but Desmarres' elevator from the beginning to the end of the operation. Those eyes with very high tension indicating a glaucomatous condition I do not touch, but advise them to come to the head-quarters hospital.

When the lachrymal sac is unhealthy, I generally extirpate it, and after some time, when the eye is free from the infection, I extract the cataract. It is my belief that enough attention is not bestowed on the condition of the lachrymal sac. This is a very important point to look to, and I am sure we would have a fewer number of cases of panophthalmitis to record if more care was paid to this matter. It is a rule with me, *never* to operate on eyes, when even the faintest trace of a secretion is present on squeezing the lachrymal sac upwards. When a leucoma is present, I vary the position of the corneal incision in accordance with the site of the opacity, and to attain this end, I have had some of my cataract knives bent to various angles to permit the incision being made properly and easily. A great difficulty experienced by most mofussil Surgeons is to induce the ignorant villagers to come to the head-quarter hospital to get operated on. Most of them, who

know nothing of the world outside of their own villages, prefer to live in blindness rather than take the trouble of making a journey of twenty or thirty miles. This is not to be wondered at, when one considers how many of their eyes have been ruined by the village quack. What the villager wants is for you to go to the village, or very close by, when he will readily get operated on. It was the realization of this fact that induced me to visit many of their villages and personally persuade them to have their eyes operated on. They appreciate this, and when they find a doctor interesting himself on their behalf, they flock to him for advice, knowing full well, that it will cost them nothing. Of course one has to establish himself somewhat, before this confidence is gained, and this is easily attained after 20 or 30 successful cases have been performed at the head-quarter hospital. One of the questions asked of me was, "Did I perform the ordinary capsule-laceration, or Smith's intra-capsular operation?" Out of these 61 operations I did 10 intra-capsular extractions with an escape of vitreous in only one case. In the others I lacerated the capsule and cut out a fairly long conjunctival flap. When working in the mofussil my rule is never to do an intra-capsular extraction unless the case is a suitable one for this operation and what is very important, unless I am sure that the patient can enjoy *absolute rest* for three or four days at the very least. I have not given up the intra capsular operation, far from it, I am giving it a very wide trial and hope shortly to publish my results on this subject. Before giving my reason for not performing it oftener in the mofussil I would here distinctly state that in my opinion a conjunctival flap is *indispensably* necessary, in cases, where absolute rest cannot be depended on, and many of my patients have walked or driven 5, 10 and 15 miles a few hours after their eyes have been operated on. It is my practice never to cut a conjunctival flap, in my intra-capsular operations, for the following reasons—(1) Such a flap is not so necessary when absolute rest can be obtained. (2) If after the extraction of the lens in its capsule blood from the cut conjunctiva enters into the anterior chamber, it is not always entirely absorbed, with the result that vision is sometimes seriously impaired. (3) If there be an escape of vitreous and blood then enters the eye, its admixture with the vitreous is not at all desirable. In fact, this should be prevented at all costs. (4) As irrigation of the anterior chamber is not necessary in intra-capsular extractions, one has no other means of getting rid of any blood that has trickled into the eye. It is on these grounds that I consider a conjunctival flap to be not only unnecessary, but a drawback when made in intra-capsular extractions. These being my views on this detail, it is quite natural, that in the mofussil, I do more capsule-laceration operations than intra-capsular

ones. With a large conjunctival flap the wound is fairly well glued at the end of a few hours and the patient can with a tolerable amount of safety walk or be driven home to his village. Another reason for not doing more intra-capsular extractions in the mofussil, is that I am not sure of the patient obeying the instructions I leave with my assistants regarding the after-treatment of the case, and as I firmly believe that the presence of a conjunctival flap quickens the healing of the wound and shortens the convalescence, and, moreover, as I always make this flap in my capsule-laceration extractions, I have preferred to lacerate the capsule in most of my mofussil cases. I do not wish my readers to think that I have changed my views (as expressed in one of my former contributions on the subject) very much, on the intra-capsular operation, for when a case of double cataract comes, I always do one eye intra-capsular and the other with laceration of the capsule, and I am keeping very careful notes on the results. Another question asked is, "Do I irrigate the anterior chamber when operating in the mofussil?" My reply is "I do not irrigate the anterior chamber and have no intention whatever, of doing so." In fact, I consider it positively dangerous at most times, for one can never be sure of absolute asepsis, when away from his head-quarter hospital; and by using the irrigator I am convinced that an unnecessary risk is run, and with what object in view? To obtain a good clear black pupil and to leave behind as little cortical matter as possible, for the aqueous to absorb. These are excellent results to obtain, but the risks run overshadow these slight advantages. I do not mean my readers to infer that I am "dead" against irrigation of the anterior chamber. It is used daily in our Presidency Eye Hospitals with impunity: institutions which possess a highly trained staff of Assistants, etc, and where the surgeon can rely on all his lotions, etc, being scientifically and aseptically prepared. Compare this condition with most of the Mofussil Dispensaries where assistants are frequently being changed, where the assistant-surgeon is so hard worked that he has no time to devote to this detail and the Surgeon has to rely on an uneducated and ignorant native dresser, a man who knows scarcely anything about antiseptics, and who learns his work at the expense of the surgeon's reputation and the loss of a good many eyes before he can even approach the stage of a smattering of antiseptic or aseptic knowledge. With this state of affairs it cannot be wondered at when I state that I look upon the irrigator as a dangerous thing. I know these views are against the experience of some of our leading ophthalmic surgeons, but they are based on my personal experience, and as such, I intend to be guided by them. I would go further and say that I consider irrigation of the anterior chamber a dangerous procedure at most, if not, at all

times I have seen due results follow irrigation of the anterior chamber. I talk now as a mofussil surgeon and not as one who has everything at his beck and call. Presidency eye surgeons (who must have been at one time of their service in charge of small mofussil stations) will, I am sure, agree with me, when I state that it is very difficult to obtain strict asepsis in their surgical work, in fact, it is the exception rather than the rule to be absolutely sure of asepsis in mofussil hospitals. With this experience before me, I prefer to err on the side of safety, and rather than run an unnecessary risk of infection by irrigating the anterior chamber, I allow some soft cortical matter to remain in the eye trusting to its absorption by the aqueous humour. To prove this danger, I will quote two eyes which went bad after irrigation of the anterior chamber. In July last I did 48 extractions without a loss. None of these were irrigated, the next case I irrigated this went bad. I broke up my irrigator, and got a new one. I did 27 other cases without irrigation, all successfully. The next one I irrigated, and this ended in panophthalmitis. I would add, that I personally attended to the irrigator in this last case. These two irrigated cases were performed on the same day as other extractions, without irrigation, so the fault was not with the instruments. I put these two losses down to the irrigator. In connection with irrigation of the anterior chamber the position of the head is of great importance. I have not seen this mentioned by any of the advocates of irrigation, viz (a) The chin should be depressed so that the face slopes downwards towards the chin. (b) The head should be slightly turned towards the side being operated on, and I need hardly add that the nozzle of the irrigator should be inserted from the side of the eye and not from above, with the head in this position, all the saline solution after it has regurgitated from the anterior chamber, flows outside of the orbital cavity and there is no chance of it re-entering the eye, after it has once come into contact with the conjunctiva or any conjunctival secretions which might be present, especially, if strong mercurial lotions have been used for disinfecting the eye. On this point I would remark that no eye surgeon, unless after a bacteriological examination, can be *absolutely* certain that the conjunctival sac of the eye he is operating on is bacteria-free. The conjunctiva with its numerous crypts and furrows, forms an ideal hiding place, for bacteria, both pathogenic and non-pathogenic. Sufficient attention is not paid to this very important point. Again the conjunctiva cannot be so effectively disinfected as the skin (which also is very difficult to thoroughly purify). It resents the use of the "Holy oils" which we use for the skin, and strong antiseptics cannot be used for fear of a violent reaction being set up. The most the present eye surgeon hopes to do, is to wash out any pathogenic

bacteria from the conjunctiva by means of flushing with antiseptic lotions. In fact, some surgeons say that "Asepsis" and not "Antisepsis" is what is required and should be aimed at. This is, at the best, a very imperfect measure, and although it answers our purposes in 99 out of 100 cases, yet we cannot be certain that the conjunctiva is sterile. It is this fear of disturbing any bacteria which might remain in the conjunctival folds, and of driving them into the anterior chamber, with the saline solution, after it has once got mixed with the conjunctival secretions, that has brought irrigation into some dispute, and this is not without sufficient justification. No one can deny the possibility of, let me call it, "this remote contingency" happening, if he allows any liquid to re-enter the eye after it has once touched the conjunctiva or mixed with the conjunctival secretions. The chance (however remote some of my readers might say, it is) of this happening is the reason why I now look upon the irrigator as no plaything, but as a somewhat dangerous apparatus, and more so when operating in the mofussil, where things are often not quite so clean as one would like and wish them to be. I have no doubt that my views on this point will not be shared by the advocates of irrigation of the anterior chamber, but they are the outcome of very careful and personal observations on the part of the writer, and as such I bow to no one with regard to them. I do not wish to hold up the finger of warning to junior eye surgeons, for I do not consider myself competent enough to do so, moreover, I do not wish my readers to have the impression, that I am against irrigation of the anterior chamber when we can be absolutely certain that the saline solution used is sterile, that the conjunctiva is thoroughly disinfected, that you have a trained staff of assistants on whom you can rely, and that the head of the patient is in the correct position. Given this state of affairs, I admit that irrigation is practically free from danger. This is the condition, we all aim at obtaining, and is one easy of accomplishment in proper eye hospitals, but not so in small mofussil hospitals and dispensaries, for reasons I have already mentioned. I also admit that with a free use of the irrigator much, if not all, the soft cortical matter, which would otherwise have taken days to be absorbed, can be got rid of at the time of the operation, that a clear black pupil is obtained, that the eye is not called upon to absorb soft cortex left behind, that the chance ofritis is somewhat lessened, or I would say, decreased in severity, that tags of capsule can be washed away from the corneal incision, that the iris can be replaced into its normal position, that the anterior chamber can be cleared of blood that might have gained an entrance into it, and that convalescence is hastened. Yet with all these advantages before me, I again repeat, that, unless the state of affairs mentioned in my previous para are

guaranteed, it is safer not to irrigate, but to trust to the aqueous, rather than run the risk of an infection of the eye, and I would now ask my junior service members and those starting eye-work to be very careful, and in case there is any doubt as to the absolute sterility of the saline solution, etc., used, not to irrigate the anterior chamber. If they do irrigate the eye, to remember about the correct position of the head when doing this, and to avoid at all cost a re-entrance into the eye of any fluid which has once mixed with the conjunctival secretions. I have somewhat transgressed from the purport of this article, viz., "my day's work."

Another question asked was, "How did I find time to prepare and operate on so many eyes in one single day?" My reply is: After I had finally selected the cases suitable for operation, one man was deputed to prepare the eyes, viz., to cut the eye lashes of both upper and lower eyelids, to wash the side of the face and forehead with soap and water and with Perchlouide (1 in 3000) and to wash out the conjunctiva with (1 in 3000) Perchlouide, the cases were then placed in a row and incisions of cocaine were started according to their order. By the time the first case had been operated on, the next eye was thoroughly cocaineised. I had only one table going but could have done with three. When the case was brought on the table, I again assured myself that the lachrymal sac was healthy, and the eye was again thoroughly disinfected by me. This is done by means of 1" square pieces of sterile lint soaked in 1 in 3,000 Perchlouide lotion, with these pieces I rub the conjunctival fornices, both upper and lower, in fact, every part of the eye is cleaned by me. Careful attention is paid to the inner canthus and the lower fornix, where one usually finds flakes of coagulated mucus, due to the previous mercurial cleansing. The whole eye is now flushed with saline solution, a drop of sterile Adrenalin chloride solution is now put into the eye and another installation of cocaine. The eye is now ready for operation which I proceed to do. The cleansing of the eye takes me about 4 or 5 minutes and the operation about 1 or 2 minutes, or roughly speaking each case occupies from 6 to 8 minutes. I do not hurry over my operations as I generally have a lot of time to spare, and time is no object to me when out in the mofussil. This works out at about nine extractions per hour, which is not very quick work, considering I was operating for fully seven and a half hours.

Another question I have to answer is "What about the after-treatment?" This I leave to my assistants. I have trained most of them in the after-treatment of cataract extractions and many of them are very well up on this point. Those patients who reside near the hospital are visited daily by the assistant, whereas those who live some distance come daily to the hospital for attendance. Atropine (2 grs to

1 ounce) is inserted into the eye (except in intra-capsular extractions) immediately after the operation, and orders are issued for the drug to be used daily, so as to keep the pupil well dilated for at least a week. Any case showing a glaucomatous tendency is treated accordingly. When I am passing through the place I inform the assistants and they collect as many cases as they can for my inspection. In this way, I have been able to see a good many of the eyes I have operated upon, and to know whether they have been successful or not. This might appear a rather "ship-shod" way, but what can one do? It is the very best under the circumstances, and is undoubtedly better than refusing to operate and allowing a village quack to do it with a certain loss of the eye. To supply these cases with proper spectacles I have asked one of Lawton and Mayo's representatives to visit these areas, and to test their eyes and give them suitable glasses. This he has very kindly consented to do, and the various local doctors have been written, to collect the cases, and to give him every assistance.

The next question asked is, "How do I manage with my cases in place where there is no in-door ward attached to the dispensary?" My practice is, to make all the cases, and by this I mean those in which the capsule-laceration operation has been performed (and which I would add from the majority), and in which a large conjunctival flap has been cut, to lie down on the floor, benches, etc., either in a separate room, or verandah, or any where under shelter for three or four hours. At the end of this time, the conjunctival flap is fairly strongly united, and they are then carried away in *pallees* and ghannies, or are led away, with instructions to come again the next day, and to rest as much as they can in their homes. Of course I would much prefer that absolute rest was enjoyed for three or four days, but one cannot be too particular when operating in a small dispensary, with perhaps only one or two small rooms. Of course in my intra-capsular extractions and more so when vitreous has escaped, absolute rest is insisted on. As this practice, *i.e.*, of allowing the cases to walk home, etc., after a cataract extraction has been performed, is against the advice and rules laid down in all text books, it would no doubt be of some interest to know my mofussil experience on this point which is "given an eye operated on for cataract, in which everything has gone smoothly, and a long conjunctival flap has been made," it makes very little or no difference in the after result of the case, whether the patient rests for some days or goes away to his village a few hours after the operation has been performed. Just as this statement will no doubt surprise many of my readers, so have the results obtained, surprised the writer. This opinion of mine is shared by Colonel Pope, I.M.S., who was the leading Eye-Surgeon in Madras, and another Presidency Eye-Surgeon to whom I

mentioned this fact, told me that such had been his experience in many cases. I do not hesitate in stating that rest is essential after all cataract operations, and that walking and driving shortly after an extraction, is not devoid of danger, but what can one do in the mofussil? He must either refuse to do the operation, in which case the patient is sure to fall a victim to the first quack who visits his village, with certain destruction of sight, or to operate on him at the nearest dispensary, and face the slight risk of allowing him to get about after you have operated on him. I feel sure that no one will disagree with me, that the better course to pursue, is to give him the benefit of a scientific operation, rather than let him swell the list of that already too enormous one of blind people, produced by that pest of villages, "the eye-quack."

In connection with this point, I think it is quite time that some law was passed prohibiting these quacks from performing cataract operations. It is a pitiable sight, and one that must be familiar to most Civil Surgeons, to see the numbers of blind people in almost every village. Surely Government can be addressed on this most important matter. I have always kept a sharp look out on these swindlers, and whenever an eye quack comes into my district, I promptly report his presence to the District Magistrate and the Police, and I am glad to say that I have been successful in ridding the district of a few of these men, who make quite a fortune out of the ignorant villagers. But what are a few to the numbers of these men (generally recruited from the Punjab), who visit most of the districts in Eastern Bengal and Assam during the winter months. I am sure that most of my readers would rejoice with me if the Editor of the *Indian Medical Gazette* would kindly remark, in very strong terms on the matter, and bring the subject into the prominence which the present state of affairs surely demands. He would be doing yeoman service not only to Civil Surgeons, who find these quacks their greatest curse in eye-surgery, for it is these people who dissuade the villagers from coming to our hospitals to be operated on, but he would be conferring a great benefit on the poor villager who, ignorant of the danger he is courting, blindly allows his eye to be operated on by these quacks. The winter will soon be on us, and with it will come the annual influx into the districts of these quacks, and I think the sooner some steps are taken, the better it will be. It is well known that these men use cocaine, and as this drug is an excisable one, requiring a special license, I would suggest that the Excise Department be advised on the matter, for I am sure none of them possess a license for the use or purchase of this drug. During my touring in the Rajshahi and Dinajpur Districts, I am sure I have seen at least 500 or 600 eyes totally

destroyed by these eye-quacks. It is to fight against these men, that I have visited a good many villages in my districts and have explained matters to them. In fact, after I extract a cataractous lens, I invariably show it to the villagers, to demonstrate to them the difference between a proper operation, i.e., with the lens extracted and out of the eye, and that performed by the quack, who depresses the lens. My efforts have been somewhat rewarded, for within the last three and a half months in the Rajshahi District, alone, I performed almost 300 cataract operations. The difficulty in obtaining much surgical work, is felt, more in Eastern Bengal and Assam, than in almost any other Province, as evidenced by the total number of cataract extractions performed during the whole of last year, viz, 500. This low number appears to me to be due to many causes, viz, the villagers are less educated and advanced than say the Central Province or Punjab, again there is no special eye hospital in the Province, as is so in most, if not all, of the other Provinces. Another causative factor is the absolute impunity with which these quacks are allowed to trade on the ignorance of the villagers. I admit that we in Eastern Bengal and Assam would not expect to get so many cataracts as is yearly obtained in the Punjab, but I feel sure that if some law was passed prohibiting this annual influx into the province of these quacks, the record would swell and would very speedily amount to at least twenty times its present total. The plan adopted by me in obtaining cases is one which has worked so well in the past, that I intend to continue it. I, first of all, enlist the sympathy of the District Magistrate, who, being as he is, a power in his district, can, if he chooses to, very materially assist you in getting cases. I then announce my intended visit to a certain place to the Police, and ask the Police Superintendent to kindly order the Inspector of the place to inform the villagers of my intended visit, through his village chaukidars, on parade days. As this is more or less outside the chaukidar's duties, I tempt them with pecuniary rewards which generally succeeds. I ask them to collect all the blind, and others, requiring surgical aid, at a certain place and on a fixed date. I am careful to be there on this very date, when to my delight I find all that a surgeon can wish for, viz, heaps of cases, eager to receive your advice and treatment. My district vaccinators are another means to me of obtaining cases. I offer rewards to the men according to the number of cases they get me, with the result that within a short space of three and a half months in the Rajshahi District I have been able to perform over 400 operations of all sorts. My expenditure has been about Rs 150, this expense is small, whereas the delight of gaining experience is incomparably great. I do not take upon myself the position of adviser, to others who have been longer in Civil employ

than I have. The most I can ask of them, *ie*, if they have not already tried my plan, is to try it, and I feel sure they will not be sorry.

The last question asked of me, "What about the results of these 61 cases?" "How have they done?" I have personally seen some of them, and they are doing very well, all that I have seen, all have been successful. The assistant-surgeon, who is looking after them, told me two days ago, when I visited the hospital, that all the cases, except one old woman, were doing remarkably well and could see well and clearly. I hope soon to hear from Lawrence and Mayo's representative of the result of his visual examination of these cases. Not a single case of infection has taken place and the old woman whose progress is not so satisfactory was almost one of the last eyes I operated on in this series of 61 cases. I remember distinctly what happened with her. My De Wecker's scissors had got blunt, after repeated sterilizations, and when I attempted to cut her iris, I know, that it tore, rather than cut the structure, with the result, that there was profuse hæmorrhage into the anterior chamber. I have no doubt, that as this is gradually absorbed her sight will improve. This works out to 60 successes out of 61 operations, *ie*, a percentage of 99 successes, one, which most surgeons are content with, and which warrants me to believe that I am not doing much, if any, harm, to my patients, by exposing them to the slight additional risk of allowing them to get about so soon after the operation. Even 90 per cent successes would satisfy me in my modest eye-work (considering how severely we are handicapped), and would not deter me from continuing as I am now doing. It is infinitely better than refusing to operate and giving the "quack" a chance at his eye with a certain destruction of vision. In other words, "Something is better than nothing." My thanks are due to Mr. Bentinck, ICS, the District Magistrate, who was at Puthia on this day and who frequently visited my operating room and witnessed several operations, for his help to me in my district work, also to Babu Surendra Nath Acharya, who so ably assisted me at all these operations, and to Assistant Surgeon Surendra Nath Mazumdar, in charge of Puthia Hospital, for his valuable assistance and help, and for attending so skilfully and attentively to the after-treatment of these cases.

A CASE IN WHICH THE THORACIC DUCT WAS INJURED DURING THE REMOVAL OF CANCEROUS GLANDS OF THE NECK.

BY T. C. RUTHERFOORD, M.B.,
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THE patient, a tall well-developed male Bengali Musalman, of the cultivator class, aged about

50, came to Hospital complaining of a lump in the neck which he stated had appeared about 4½ months previously.

On examination his general health appeared good. On the left side of the neck was a fairly regular ovoid mass rather larger than a large orange and occupying the greater part of the lower half of both the anterior and posterior triangles. The left sterno-mastoid could be felt and seen superficial to the mass which did not involve the skin. The lower border could not be defined as it lay behind the collar-bone. The tumour could be moved transversely to a certain extent but not vertically. It was of a uniformly hard consistence. Malignant disease of the cervical glands was diagnosed, but although a careful search was made, no malignant disease elsewhere could be discovered.

Operation, 5th August 1907—The parts having been cleaned and the patient anaesthetised, an incision was made along the collar-bone from the junction of its outer and middle thirds to its inner end and subsequently extended upwards in a curve having its convexity forwards to a point one inch below the tip of the mastoid process. The skin flap was dissected up and thrown backwards and the superficial fascia (which was only slightly adherent to the tumour), incised in a similar manner. The anterior border of the sterno-mastoid was defined and traced downwards until it was discovered that it was firmly adherent to the tumour throughout its lower half. The spinal accessory nerve was then defined at its point of entry into the sterno-mastoid, and the latter divided about one inch lower down. The internal jugular vein was then defined and traced downwards until it became incorporated in the tumour at a point opposite the cricoid cartilage, when it was clamped at a somewhat higher level and cut away. The vagus nerve was then defined and cut away at about the same level as it was found to run through the middle of the tumour. It was then found that the common carotid artery was adherent to the tumour from its bifurcation downwards as far as it could be traced, *ie*, about 1½" below the level of the upper border of the manubrium sterni. It, the common carotid, was then dissected away from the mass, and at the same time the layer of cervical fascia overlying the scalene muscles of the neck was divided.

The posterior border of the tumour was then freed and the origins of the sterno-mastoid from the collar-bone and sternum cut away. The lower attachments of the cervical fascia having been freed, the tumour mass was then dissected out with the finger from behind forwards and downwards. Several large veins were cut and tied at this stage, care being taken not to injure the pleura as the lower border of the tumour lay behind the first rib and sternum. The mass having finally been separated with the knife and the glands lying below the upper end of the

sterno-mastoid, although apparently healthy, removed and all hæmorrhage stopped, except some oozing from the lowest part of the wound, the skin was united by interrupted silk stitches except at its lower and outer end where a large drainage tube was inserted and the wound dressed.

Progress—Free venous oozing occurred during the first twenty-four hours. The tube was then removed and it was noted that there was a great deal of what was then supposed to be serious discharge. This continued for two or three days when it was noted that the discharge was somewhat milky in character and was flowing from the inner and lower angle of the wound as well as from its outer end. It was then recognized that the thoracic duct must have been wounded. Shortly afterwards the discharge from the outer end of the wound ceased, but that from the inner angle (*i.e.*, over the inner end of the collar-bone) was still copious. This discharge continued for about three weeks after the operation when it ceased and did not recur. The wound healed by first intention, except at the situation from which discharge took place, and the stitches were removed on the tenth day. The patient's general condition was perfectly satisfactory throughout, although the pulse was irregular for about a fortnight, beats being frequently "dropped."

Observations—There are several points of interest—

1st—That the patient experienced no inconvenience from the total loss of power in the left sterno-mastoid, its lower half having been cut away. All the movements of the neck were perfectly performed.

2nd—The complete occlusion of the internal jugular by the tumour mass without any symptoms. In freeing the lower border of the tumour the internal jugular vein was not recognized, although, from the relations of the tumour, it must have been cut through.

3rd—The injury to the thoracic duct and removal of a large portion of the vagus nerve. Similar cases have been previously reported (*vide* Cheyne and Baighard's Manual of surgical treatment).

4th—The tumour mass after removal weighed 9½ oz and on section presented, to the naked eye, the appearance of a typical "scirrhous" cancer.

RATS AND GUINEA-PIGS AS "PLAGUE BAROMETERS" *VERSUS* RAT DESTRUCTION

By R. O. SAIGOL,
CAPTAIN, I.M.S.,
Rangoon

OWING to the part played by rats in the dissemination of plague, rat destruction has been universally recommended and tried in almost

every town threatened with or attacked by this disease. Many and various have been the means suggested to accomplish this end—traps, poisons, bacterial preparations, sulphur asphyxiators, etc., and cat-keeping, but all those who have been engaged on this work must admit that the results achieved by any or all of these methods combined and further strengthened by the payment of a capitation fee, have been far from encouraging in so far as the extermination or any appreciable decrease in the number of rats is concerned.

The ultimate object of this measure being rat extermination, I doubt very much if that will ever be attained. It is possible to rid a particular house or building of rats, but to expect to rid a whole town of these pests, seems to me too much to expect. Many have no doubt succeeded in killing large numbers of rats (presumably bandicoots, field rats, "muskrats" and mice in addition to the black or house rat) and have attributed the mildness of the next epidemic to this factor, though no mention is made if the rodents were actually less than before. Others on the other hand who have killed equally large numbers, have failed to notice any diminution in their frequency. Taking the instance of Rangoon alone, ever since plague operations commenced here, rats have been killed in very large numbers, and although this has been going on for about three years, rats are still coming in at much the same rate, and there is hardly any decrease noticeable in their number. Considerable sums of money have been spent in payment of rewards and entertainment of a special staff, but all this money has been and is being spent without doing much good in so far as the rat population is concerned. In most places all available funds are being spent in this direction, and as no Municipality can bear a constant drain on its limited resources, other matters such as roads, lighting, etc., are apt to suffer. Various bacterial preparations have of late been put on the market. I have tried (though on an experimental scale only) Danysz rat virus, Azoa and Rattin, but doubt very much if any of these would exterminate rats, taking for granted that the public will not object to our using wholesale baits charged with these and co-operate with us. What disease could be more contagious and deadly to rodents than plague itself? Yet they exist in such large numbers as to actually necessitate other means to get rid of them.

Our object is to save humans from falling victims to the disease, and I believe if our exertions were directed in arranging means to prevent free rats from coming in contact with them as much as possible, better results might be expected. Thus by building rat proof-houses, improving the sanitary conditions of houses, and at the same time training people to keep them clean, rats would, to a great extent, be prevented from getting inside the houses. As

the object of this paper is not to discuss "Anti-plague measures" but to introduce a new idea, viz, of keeping live rats or guinea-pigs in houses, I will limit myself to this for the present. It has now been proved by the Plague Commission that plague is conveyed from rat to rat and most probably from rat to man by fleas. That when a plague-infected rat dies, the fleas leave its carcass, and in the absence of their own host in their hunger, attack humans and thus infect them. Now if rats or guinea-pigs (animals that attract *pulex cheopis*) were present in the house, it stands to reason that all fleas from the infected dead rat will attack them in preference to humans. It is on these grounds that I venture to recommend that each household should be induced to keep guinea-pigs or three or more cages (according to the size and number of rooms) containing at least three rats in each cage. Thus, even though we might not succeed in keeping rats from coming in, we certainly would ensure against an attack of fleas at least to a certain extent. The advantages of this method are threefold. *Firstly, they will act as a "plague barometer"*. Should any of these animals get plague and die, their carcasses could be examined, and while this was being done, the animals would retain the fleas from the dead animal (as it is most improbable that they would all die together) and if the diagnosis were confirmed, evacuation or any other measures contemplated could be carried out, the "Barometer" rats or guinea-pigs destroyed under proper precautions and fresh animals substituted. Early detection of disease is most essential in our campaign against plague. *Secondly, they will act as flea-catchers and retainers*. All stray fleas owing to their habits will attack and remain on the animals and thus they will save human beings from these pests and indirectly from plague. *Thirdly, they will act as "locality indicators"*. We all know how a plague sick rat wanders about and is liable to die in localities other than where he caught the infection, and thus the original site of infection is liable to escape detection. But if these cages are employed, the animals will not be able to wander about but, when infected, will indicate the exact place of danger which could be dealt with as desired.

"Rat observation" is an important measure. It will therefore be necessary that either animals are periodically inspected to ensure that sickness or death among them is brought to the notice of the authorities as early as possible, or that several depôts at convenient places in the town are opened where these animals could be periodically brought for inspection and to be freed of their fleas if considered necessary.

Most people have an aversion to rat-killing, but I doubt if any will object to keeping rats or guinea-pigs in houses if the rationale and the benefits to be derived therefrom were explained to them.

The likely objection to be raised against the idea would be that as already a too large number of rats are present, the "Barometer" rats would be unnecessary. However, it is known that on the appearance of an epizootic among rats, all healthy ones quit the locality, leaving their sick and dying behind and which are the source of infection. "Barometer rats" being unable to escape will here be found useful and thus fulfil their purpose.

A Mirror of Hospital Practice

NOTES ON A CASE OF RUPTURE OF THE UTERUS

By H. F. LECHMERE TAYLOR, M.B., D.P.H.

MIR BIBI, Muhammadan, aged about 35, the mother of five living children, was brought to hospital at 7 o'clock on the night of the 10th of September, with a history of having been already five days in labour. Her person and clothing were in a filthy condition and the smell proceeding from the bed, at a distance of even several feet, was overpowering. The abdomen was greatly distended, the swelling being markedly greater in the upper part.

She was at once put under chloroform, when a mass the size of a large orange was found protruding from the vulva, evidently a shoulder with the arm torn off, for the denuded scapula was still attached to the trunk. With some difficulty, owing to tonic contraction of the uterus, a leg was seized and the foetus delivered. The hand, on being introduced to remove the placenta, passed through a large opening and at once came in contact with the bowels. The rent in the uterine wall was extensive, and seemed to be obliquely across the lower part of the organ anteriorly. The cervix was intact, and the bladder had evidently also escaped injury, as it emptied itself of a quantity of clear urine as soon as the child was delivered. The placenta was found partly putrid and partly adherent to the dome of the uterus above the rent, and was removed along with a few clots of blood. Needless to say, the whole contents of the uterus were extremely septic.

There seemed to be almost no bleeding going on, and after cleaning out the uterus as far as possible and gently squeezing the vagina with hot bimodide lotion, hypodermics of strychnine and ergot were administered, and the patient put to bed with a rectal injection of hot water, brandy and Bovril. Her condition was almost hopeless, but she rallied somewhat, and during the first part of the night seemed to be more than holding her ground. In the early morning, however, she sank and died. Though in its features of long delay in seeking medical relief and extreme sepsis the case is of a kind characteristic more of this

country than of Britain, it affords an excellent illustration of the fact emphasised at the recent B M A. meeting at Exeter that sudden severe and (still more) of fatal, hæmorrhage is by no means a necessary accompaniment of even a long tear in the uterine wall. Dr Munro Kerr (*B M J*, August 24) says that of 13 cases in his own experience only 3 shewed "extremely severe" hæmorrhage, and he refers to the "very erroneous idea," but one expressed by those with little experience of this complication that rupture of the uterus is followed immediately by profuse bleeding. In the case under review there was no evidence of severe hæmorrhage either internal or external the clots in the uterus were neither numerous nor large, there was no marked bleeding per vaginam after the uterus was emptied, and the hand in the abdomen certainly found no traces of "large quantities of extravasated blood in the peritoneal cavity" (Playfair). In the text-books sudden collapse due to severe hæmorrhage is much dwelt on as a cardinal feature in these cases.

The diagnosis of the accident is apparently by no means easy, for Dr Kerr remarks that "it is a very striking fact that in a large number of cases the rupture has not been recognized till after the birth of the child." In the present case the appearance of the abdomen suggested, at the first glance, either twins or a monstrosity as the cause of difficulty in delivery. No careful palpation of the abdomen, however, was carried out, as the patient's condition demanded instant attention to practical measures. It is said that when the foetus has passed into the abdominal cavity the recession of the presenting part and the palpation of the child apart from the contracted uterus may lead to a diagnosis. The case is somewhat different when the presenting part is already engaged.

As regards treatment with the records of modern surgery before one, the tendency is at once to proceed to abdominal section. It is instructive, however, to note that Dr Kerr records only three cases of recovery out of nine operated on by himself, and that presumably under favourable conditions. In all his cases he appears to have performed hysterectomy. It is not clear why the radical operation was practised when suture might conceivably have met the needs of at least some of the cases. Dr Herbert Spencer regards hysterectomy as rarely necessary and abdominal section as required almost solely in cases where the foetus has passed wholly or partly into the abdomen. The indications for the latter operation would appear to be, (1) for delivery of child from abdomen, (2) to check severe hæmorrhage, (3) the symptoms of which may develop only gradually to close a very extensive rent especially of extending into the broad ligament. Otherwise, provision for drainage with gauze packing of the vagina seems to be the course to follow, and as Dr Kerr says this is a matter for

satisfaction, seeing that it is the simplest treatment to carry out.

It must not be forgotten, of course, that rough or unskilful manipulation in delivery in such a case as that reported may itself cause rupture. In the present instance, I think, that can be excluded.

A CASE OF CONTINUED HYPER-PYREXIA

By W. JEUDWINE,

CAPTAIN, I.M.S.

THE following extraordinary case is deserving of record —

L, aged 18, a Dogra, was admitted to hospital on 13th September 1907, suffering from fever.

H P C—The patient had had slight fever for a few days previously, but otherwise had been quite well and had some "fever" before.

The patient is a well-developed, well-covered lad, intelligent, answers questions readily, lies in bed on his back. Complaints of no pain anywhere. Temperature 104° . Pulse 80. Volume good, regular in form and frequency. Tongue furred. Constipation. Face well, ears well, no discharge.

Chest—No cough, sounds clear, abdomen, spleen slightly enlarged.

Blood—Examined for malaria, no parasites discovered.

The patient was given a purgative and quinine gr \times (t i d) and he took milk, water, mutton essence well. His state remained practically the same until the night of 15th when his temperature suddenly went up to 109.4° .

The patient was insensible, pulse about 110, very feeble, the hands were clenched, titany present, but no other spasm, no squint, no paralysis. Respiration shallow. No vomiting, no rigor. He was cold sponged, ice applied. Temperature fell to 100.6 at 7 A.M. He was still insensible and could not talk. Another specimen of blood was taken and Benign tertian parasites were discovered. During the time preparations were being made to take a specimen of blood, finger cleaned, etc., the patient showed an animal-like knowledge that something was going to be done to him and that he was going to be hurt. He resented being cleaned and when his finger was pricked he cried out and made grievances, but he could not utter any word. He seemed frightened after the operation was over.

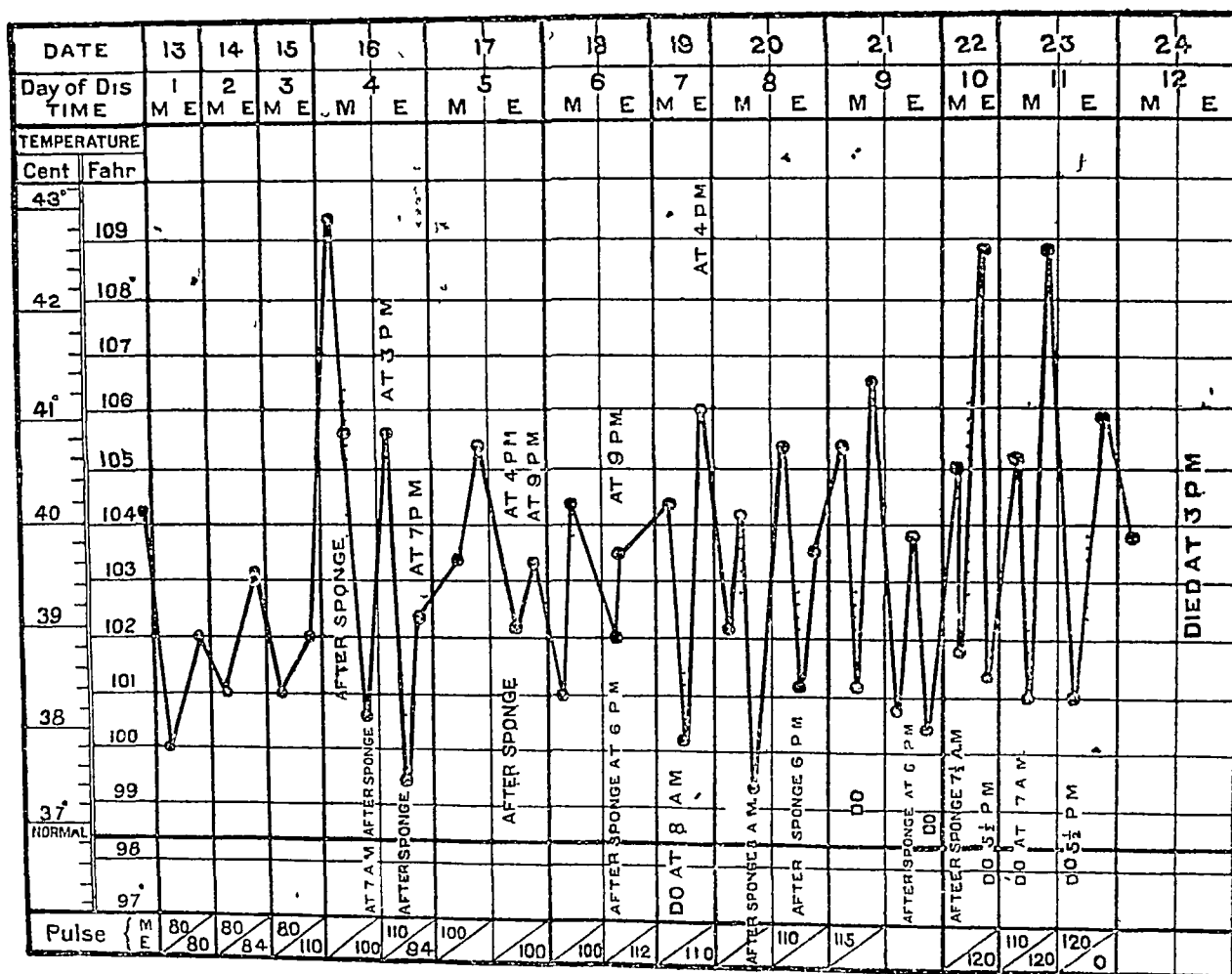
16th September—Quinine was given per rectum (in gr xxx doses).

18th September—He is still senseless, much thinner, swallows liquids, bowels opened.

He has delayed sensation all over his body, and when the sensation is painful, *eg*, by a pinch or pin prick, he has a spasm. There are no paralysis at all, squint, etc., all viscera are apparently normal.

A CASE OF CONTINUED HYPERTHYREXIA

By CAPTAIN W JEUDWINE, I M S



24th September—Reflexes lost entirely, occasional spasm. No paralysis. Heart sounds faint, no murmur, lungs clear, no cough, no rales, no rash or retraction of head ever seen. Temperature was 108.6° on 22nd and 23rd, ice externally, iced drinks, iced enemata were all tried.

Patient gradually got weaker and thinner, subsultus tendinum present. Latterly he had a mixture containing Digitalis, Spt etheri, Spt amm aromat. Blood was taken from a vein and sent to Kasauli for examination for micro-organisms. None were discovered.

No lumbar puncture was made. Whatever the cause of this hyperpyrexia may have been, I think it shows that blood should invariably be examined at once for parasites. A prognosis in a case of fever when parasites are not found may be very bad and should be guarded. It is most unfortunate that post-mortem examinations cannot be performed.

I am inclined to think that this may be a case of enteric with hyperpyrexia, parasites were found. Quinine was not given on 14th or 15th, subsequently given without producing any beneficial result.

EXTRA-PERITONEAL WOUND OF LARGE INTESTINE

By P. ST. C. MORE,
MAJOR, I.M.S.

AN interesting example of the above rare lesion is, I think, worthy of record.

On the morning of the 29th March 1907, Mehar Din, a Dhobi, aged 30, was brought to hospital, suffering from a clean cut penetrating wound of left hypochondria, situated in the ninth intercostal space, mid axillary line, the injury was caused by a long knife in a friendly dispute with his brother.

On admission patient was in state of collapse, pulse quick and bounding, there was little or no hæmorrhage externally.

Refusing all surgical interference, he was put to bed, adrenalin chloride hypodermically and normal saline solution in per rectum. From this, he rallied almost immediately. The external wound was sewn up and aseptically dressed.

Diet—Very small quantities of milk and water to sip.

30th March 1907—Considerable retching, abdomen tender and slightly distended, pulse rapid and very weak, temperature 102°F. A troublesome cough has now supervened, and complains of slight pain over base of left lung. Nothing abnormal to be made out on examination.

31st March 1907—Passed several times to-day large masses of blood clot, in state of general collapse, but rallied under injection of saline solution and Adrenalin Chloride.

2nd April 1907—Patient much better, but has daily passed several large blood clots. External wound completely healed, and general

condition much more satisfactory, the temperature remains at average of 101°F.

4th April 1907—Abdomen normal and no pain on palpation, but cough still troublesome, and temperature remaining high.

8th April 1907—Motions normal and temperature fell this morning to normal.

12th April 1907—Improving rapidly, and with exception of slight rise of temperature towards evening in normal health.

17th April 1907—This morning was suddenly attacked with severe pain in bladder and shortly after passed a large quantity of blood per urethra. The bladder was washed out, several clots being removed. The bladder itself appearing normal. The temperature rose to 100°F.

18th April 1907—Complains of severe pain over region of left kidney, blood still appearing in urine.

21st April 1907—Urine now normal, and renal pain has quite disappeared, patient insists on leaving hospital, declaring that he feels perfectly well.

23rd April 1907—Discharged at his own request.

REMARKS

The knife entered at level of costo-diaphragmatic reflexion of the pleura, perforating the costal attachment of the diaphragm, and must have passed below spleen and between that organ and stomach, entering the large intestine at or below the junction of splenic flexion with descending colon—at same time wounding the adjacent kidney. In this situation, the colon is generally, though not universally, without a mesentery its posterior surface being bare and connected to diaphragm and quadratus lumborum, on both of which it rests, by loose connective tissue.

The kidney also is in contact with descending colon, the latter curving round its outer margin. I assume the injury was as above described, as granting that it was a fairly large wound of intestine (as instanced by the large amount of blood passed by rectum), it is hardly conceivable that such an injury could be intra-peritoneal without causing fatal peritonitis.

The later hæmorrhage from the bladder is more difficult to explain, my diagnosis being that it indicated a wound of kidney, the natural outlet *via* ureter being for a few days blocked by extra-peritoneal extravasation, the result of injury to bowel and kidney or both.

MULTIPLE ABSCESSSES OF LIVER—RECOVERY

(Written by RAMANI MOHAN DAS,
Civil Hospital Assistant, Ayal Hospital, Lushai Hills
District, Assam)

By F. G. HURST,
Civil Surgeon, Lushai

HIRA, aged about 24, Hindu, Gurkha male of the Lushai Hills Transport Corps, was admitted

into the Ajal Civil Hospital, on 23rd January 1907, complaining of fever, from which, he said, he had been suffering for the last 12 days. He had had three admissions into the hospital for malarial fever. No history of dysentery, but reported to have been accustomed to drinking. General health indifferent, little anæmic, slight enlargement of spleen, liver normal, bowels regular. From the date of admission (*i.e.*, 23rd January) to 1st March, the temperature in the evening ranged from 100°F to 103°F with morning fall to normal. During this time there were only four days without fever. The usual treatment of pernicious malarial fever was resorted to, including several hypodermic injections of quinine bihydrochloride 5 grs., tablets as well as quinine sulphate by the mouth, but with no effect at all. Microscopical examination of blood from spleen and finger did not reveal any pigmentation or malarial parasites. Bowels moved regularly and the stools were normal in colour and consistency, except two days when they were loose. Locally there was no bulging of the chest wall. No pain or tenderness and no symptoms of jaundice.

But all of a sudden, on the evening of 1st March, the patient complained of pain in the right hypochondriac region felt more along the right costal arch. An abscess in the liver was suspected and the organ was explored with a hypodermic needle syringe and pus found. A free incision was made in the abdomen vertically downwards from the costal margin 2" to the right of the median line. As the organ was not adherent to the parietis the gap between them was filled in all around the incision with antiseptic gauze to prevent the escape of pus into the peritoneal cavity. The abscess was situated deep in the organ near its posterior surface. A big quantity of thick sanious pus was let out which measured 12 ozs. and the cavity drained with an India-rubber drainage tube. The operation was done by the then Civil Surgeon, Capt C G Seymour, I.M.S. There was copious bile-stained discharge and the dressings had to be changed thrice daily. The wound washed with salt solution (2 dis of Sodium chloride to a pint of warm water), and the cavity began to be syringed with the same lotion from the fifth day of the operation. The condition of the patient, for some days after the operation, was too low to entertain any hope of recovery. So nourishing diet (chicken soup, egg mixture, etc.), and stimulants were given in sufficient quantity. Purulent discharge stopped by the 8th March, but escape of pure bile through the wound continued.

The day following the operation, the temperature rose and continued doing so till the 11th March when an area of comparative dullness extending from the 4th to the 8th intercostal space of the right chest between the anterior and posterior axillary lines was found out and the part was explored with hypodermic syringe and

pus drawn out with the needle from the pleural cavity. The patient was put under chloroform and a portion of rib about 3" in length was removed from the middle of the seventh rib by Capt C G Seymour, I.M.S. External air rushed into the pleural cavity but no pus escaped through the opening made. The wound was sutured, leaving a gap between the divided ends of bone. The patient just after the operation sank so low that his life was despaired of. Pulse almost imperceptible even at the axilla, respiration short, slow and abdominal and face livid. Hypodermic injections of sulphuric æther, strychnine and digitalis were given and the patient rallied gradually in the evening. The operation wound healed by first intention and the fever altogether stopped for seven days following the operation. Then again from the 18th March the temperature began to rise every evening to 100°F and 101°F, and fall to normal every morning with profuse perspiration and great prostration. This fever continued for about one month without developing any particular symptoms. The discharge of bile from the sinus of first operation, though plugged daily, still continued. There was no change in the character of stools. The patient was very much emaciated and almost reduced to a skeleton. The patient complained of slight pain in the right hypochondriac region on 17th April which continued till 23rd April, when a slight bulging of the chest-wall at the middle of the right side was noticed. The patient was laid on the table and an incision at the sixth intercostal space in the mid-axillary line was made and the abscess cavity in the liver was laid open and about a pound of pus let out, and the cavity drained with India-rubber drainage tube. The operation was done by the Civil Surgeon, Mr. F G Huist. The cavity was syringed with warm boric lotion on the evening of the 3rd day of the operation. There was no rise of temperature since this last operation. On the fifth day after the operation the stools became clay-coloured. A pill made up of Pulv Ipecac, Podophyll Resin $\frac{1}{2}$ gr each, Pil Hydrag Subchlor 1 gr, and Pulv Rhei 2 grs, with Extract Gentian was given twice daily which improved the character and colour of stools to a considerable extent. The biliary sinus resulting from the 1st operation was completely closed on 23rd May and the last operation wound also healed up simultaneously. He then gradually came round, picked up considerably and was discharged cured from the hospital on 14th June 1907.

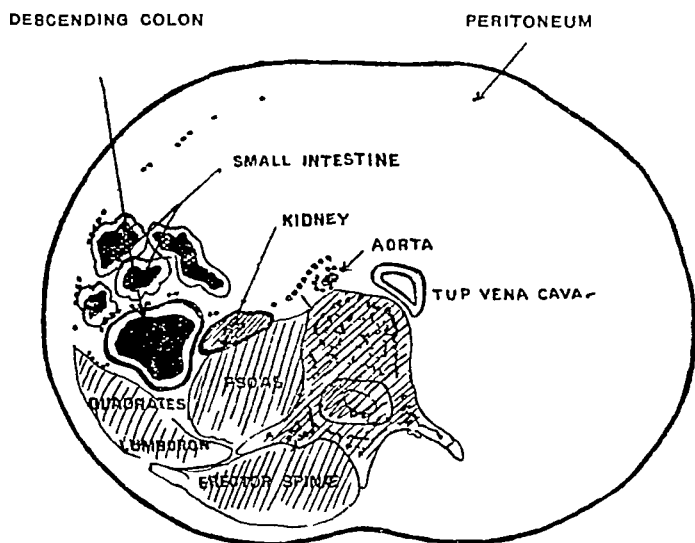
Notes for clinical interest are —

- (1) Multiplicity of large abscesses of liver which are generally solitary
- (2) Recovery after three operations in such an extreme stage of general prostration
- (3) Total absence of pain (in case of 1st abscess) except on the days preceding the operation

EXTRA-PERITONEAL WOUND OF LARGE INTESTINE

BY MAJOR P ST C MORE, 1 M S

Q



ROUGH DIAGRAM OF TRANSVERSE SECTION OF ABDOMEN AT
LEVEL OF INJURY, i.e., LOWER BORDER OF 2ND L VERTEBRA

- (4) Absence of symptoms of jaundice
- (5) No change in the character of stools before and after the 1st operation as well as before the third operation, while these symptoms followed later on after the third operation instead of preceding it

HORSESHOE KIDNEY

By J T PARKINSON,

Civil Surgeon, Fatehpur, U P

On the 20th April 1906 a prisoner recently admitted into the jail by name Bhowani, caste Kewat, age 40 years, committed suicide by dropping into a well. He and his brother-in-law had together been convicted of dishonestly receiving stolen property only three days previously and sentenced to 12 months' imprisonment. They appear to have brooded a lot over their position and their family affairs and whether from grief or shame or both they determined on suicide. (Instances are known when owing to distress of mind arising out of a criminal charge suicide was the result.) They were located at that time, being recent arrivals in jail, in a segregation camp as a precautionary measure against plague which was then prevalent in the district. Here they squeezed themselves through the opening in the wall, the dimensions of which opening measured only 12 inches by 11 inches, and dropped in. The brother-in-law was taken out alive, but Bhowani's body was not recovered for over an hour. It was a most determined suicide and attempt at suicide.

Post-mortem examination disclosed the following appearances —

There was no external mark of violence anywhere. The body was well nourished and rigor mortis present. The nails on the hands and feet were of a livid colour.

Head — The scalp was sodden and suffused. The skull was intact and the brain engorged with dark fluid blood.

Chest — The ribs were intact and the wind pipe normal. Both lungs were much congested soft and spongy, but crepitated on pressure and section. The right side of the heart contained a small quantity of dark fluid blood and the left side was empty. Both venæ cavæ were engorged with dark fluid blood.

Abdomen — The stomach was normal and contained a quart of water and a full meal of *ata* undigested. The intestines were normal and the liver and spleen both congested. There was only one kidney horse-shoe in shape and the bladder was full.

The cause of death was asphyxia and cerebral congestion from drowning.

The above appearances are those usually found in cases of drowning and it is only the rare condition of horse-shoe kidney which calls for remark.

The kidney was found lying across the spine opposite the lowest attachment of the crura of the diaphragm in front of the 4th lumbar vertebra with its concavity upwards. It had two ureters, one on either side which descended behind the kidney passing downwards to enter the bladder in the usual position. The kidney weighed ten ounces which is about the weight of two normal kidneys in the male taken together. It measured from end to end along the greater curvature $12\frac{1}{2}$ inches and was made up more by the right than the left half of the organ. The length of a normal kidney being about 4 inches, the increase in length in this instance is marked and was made up by the central dependent point of union. The breadth of the right side was $2\frac{1}{2}$ inches, while that of the left was 2 inches. This single kidney was found to be formed by the fusion of the two kidneys at their lower ends at which point the organ was made up of purely renal cortical substance plainly seen on section and not a union by fibrous tissue as seen sometimes and noted by Green in his book on pathology. In every respects each half was a perfect kidney, on section the pelves, calices, medullary and cortical substance being perfectly distinct and normal. Treves states that the condition of horse-shoe kidney is met with in 9 out of 14,318 subjects examined, and he and other writers note that the ureters descend over the anterior surface of the organ. In this instance the ureters descended from behind.

CASE OF SNAKE-BITE

By R GAUDOIN,

Civil Surgeon, Yamethun, Burma.

MR LOPEZ, Eurasian, aged 39, was admitted for poisonous snake-bite on the 11th May 1907, and discharged cured on the 8th July.

11th May 1907 — The patient is a half-witted Eurasian, and is supported by his brother, a railway guard. A short time previously he had been tattooed by a Burman as a charm against snake-bite. Fully believing he was immune to snake poison, he fearlessly caught and handled snakes. These I was told were poisonous ones (?). On the morning of the 11th at the request of a neighbour he caught and dragged out of a pigeon loft a cobra. He took it to the railway station and exhibited it to those there. I was surprised to hear how freely he handled the snake, and every time the snake expanded its hood, he tapped it on the head and it quieted down. He caught the snake roughly when it turned and struck him on the left hand. A ligature was immediately applied at the wrist and he went home. He caught the snake at about 7-30 A.M., was bitten about 8 A.M., and he came to hospital on foot with a servant carrying the snake between 8-45 and 9 A.M. I must say the snake was not exhibited for money.

The snake was a cobra and measured 41 inches in length

On arrival he fainted. He was roused and given a dose of spirit aromatic ammonia. I found two punctures at the base of the left index finger on its palmar aspect. He complained of pain along the arm to just above the elbow. A ligature was now applied to just above this spot. I scarified the wounds and kneaded the part till it bled freely. Hæmorrhage was encouraged by immersing the hand in hot water and continuing the kneading, permanganate of potash was then well rubbed into the wound, and the patient put to bed.

Half an hour later the pain had increased. Bleeding was again resorted to by kneading and the application of hot water. At about 10 A.M. he complained of pain in the arm, faintness and headache. He was given strong coffee. At about 10-30 he complained of pain in the precordial region and dimness of vision. The wound was again cleaned, scarified, bleeding encouraged and the permanganate was again applied. About noon he was better. His vision was normal and the pain had left the chest.

The soft tissues on the back of the hand between the wrist and the knuckles sloughed away, exposing the bones and tendons. This healed by granulation very slowly, even after skin grafting.

On the 24th dry gangrene set in from the top of the index finger, and the finger was disjointed and removed at its base on the 20th June (the patient would not allow its being done earlier).

On the 29th May a small sinus formed in the palm of the hand. The discharge was offensive. This healed about the beginning of July.

He was discharged on the 8th July as cured. He returned (as an out-patient) shortly after with a small discharging point on the hand of the 2nd metacarpal bone. This healed very slowly.

His fingers are extended and stiff.

REPORT OF A CASE OF RUSSELL'S VIPER BITE TREATED BY PERMANGANATE OF POTASH

By E. J. MURPHY

Civil Surgeon, Maubin, Burma

KO SI MOUNG, a Karen male, aged 38, of Letkhobin village in the Maubin district, was brought to head-quarters for treatment.

History—The patient stated that whilst working in his fields, about ten days previously, he was bitten by a snake on the outer side of his right foot. He was attended to by one of the Roman Catholic priests, who washed the wound with warm water and then applied some Boric powder.

As the patient appeared to be getting worse, he was sent into hospital for treatment. On

arrival he was found to be in a very low state suffering from hectic fever. Pulse weak and irregular, marked anæmia, foul tongue and an anxious expression. There was a large sloughing ulcer extending from about 1 inch above the right ankle joint to the tarso-metatarsal joints of the foot. The slough involved the dorsum of the foot between these points. The ulcer had destroyed all the superficial tissues, laying bare the tendons of the extensor communis digitorum, and the peroneus tertius, as well as exposing the anterior annular ligament on its outer side. In the slough there were two small spots, which showed out more distinctly than the rest, consisting of ashy grey tissue. These two spots were said to be the points at which the fangs of the serpent had penetrated the foot. The leg was swollen and had a brawny hardness up to the knee joint. It was extremely sensitive to touch. There was a slough encircling the leg at the knee, where a ligature had been applied by the patient the moment he was bitten.

Treatment—As there was no antivenene available, I decided to cleanse the wound by warm Permanganate Irrigations, removing as much of the slough as possible. I used more than a gallon of 10 grains to the oz of this, at the first dressing. The first three irrigations used, caused a considerable amount of pain and the Permanganate was decomposed as it flowed over the wound. After this, the wound appeared to become anæsthetic, no pain being complained of. After the wound had been rendered as sweet as I could get it, it was dressed with Permanganate. The patient put on a general tonic, stimulants and a generous diet.

Progress of the Case—The evening temperature was 104° coming down to 99° in the morning. The next evening it was 100° and next morning it had gone up to 103°, where it remained for a day.

After this the temperature fluctuated between 101° and normal for ten days.

The patient was under treatment for two months in hospital, and had regained the power of his right foot, with a slight amount of stiffness in the ankle joint.

Remarks—There is no doubt that the patient was bitten by a Russell's viper, for every village Burman knows a Mwe Bwe. The snake though not brought to hospital was killed by the patient. He also at once identified a picture of the snake when one was shewn him. Besides this, on his discharge from hospital, I asked him to send me a snake of the same kind which bit him. He sent me a very fine Russell's viper a few days ago. The village he came from is also noted for its large number of vipers. So there does not seem to be much doubt this being a case of Russell's viper bite. What the action of Permanganate in the case was I am unable to say.

[The following note is inserted as an extra inset as it was received too late and its practical importance justifies its being early published—ED, I M G]

PRELIMINARY NOTE ON QUININE SULPHATE AS A FACTOR IN THE CAUSATION OF BLACK-WATER FEVER *

By D M'CAY, M.B.,

CAPT, I M S

THE results obtained from investigations carried out on the hæmolytic of the red blood corpuscles seem to have a very important bearing on the supposed action of "Quinine" in causing Blackwater fever.

In health it has been found that the action of sulphates in any form upsets, for a time, the osmotic equilibrium that normally exists between the red blood cells and the plasma in which they float.

In a series of observations on this action of different sulphates—quinine sulphate, magnesium sulphate and dilute sulphuric acid—a very serious decrease was obtained in the total number of inorganic salts of plasma—implying, in turn, a serious decrease in the osmotic tension of the plasma. The red cells being impermeable, no change takes place in the number of their inorganic molecules, but, by endosmosis, water passes into them, causes them to swell up and, if the decrease in the plasma is sufficient, eventually to burst and extrude their hæmoglobin.

In Blackwater fever the hæmolytic is due probably to three factors—

(i) The injury to the stroma of the red blood corpuscles caused by the malarial parasites.

(ii) The presence of an hæmolytic.

(iii) Administration of sulphates.

(i) and (ii) may be sufficient to produce Blackwater fever, but (iii) may become the precipitating

cause when (i) and (ii) are ineffectual, i.e., the sudden lowering of the number of inorganic molecules in the plasma—due to the action of sulphate on the inorganic salts of the plasma—may become sufficient to produce a difference in pressure between the plasma and the injured red blood corpuscles which those corpuscles cannot withstand and therefore break up.

Further research showed that while sulphates caused a lowering of the resisting power of the red blood corpuscles to hæmolytic, chlorides, on the other hand, caused an increase. In every experiment where quinine hydrochloride (particularly when combined with sodium chloride and acid hydrochloride dil.) was given no fall in the salts of the plasma took place, but usually a well-marked rise.

As malaria is the underlying factor in the cause of Blackwater fever, and, as in order to get rid of that source of danger, quinine must be given, the rational indication both for prophylaxis and treatment—in the light of the results outlined—is to avoid giving sulphates in any form, and to administer quinine in the form of the hydrochloride or acid hydrochloride.

In addition to sulphates, large quantities of alkaline carbonates or compounds of alkalis with vegetable acids, and potassium salts should be avoided. These all tend to lower the number of inorganic molecules in the blood and therefore to bring the red blood corpuscles nearer to their hæmolytic point.

On the other hand, chlorides, quinine, hydrochloride, calcium chloride and sodium chloride, have the opposite effect, and therefore tend to increase the resisting power of the red blood corpuscles.

The importance of following this line of treatment in districts where Blackwater fever is prevalent is obvious, and it would appear very probable, if it be adhered to, all those cases of Blackwater fever occurring immediately after the administration of quinine sulphate would be prevented.

* A full account of the work on which this paper is based will be given at the December meeting of the Asiatic Society, Medical Branch. ED—I M G

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INJURIES AND TETANUS

IN our April number (p 142), we discussed the question of the value of antitetanic serum in the prevention of tetanus after injury. It is well known that tetanus is a very common sequela to injuries in Calcutta and Bombay, but we know of no evidence that this serious consequence follows so frequently, injuries received in other parts of India, and the replies received to our special inquiry have been too few to afford any information on this matter.

For five years past the *Journal of the American Medical Association* has published elaborate statistics regarding the injuries received during the celebration of the "Fourth of July," with particular reference to tetanus resulting from these injuries. The following table gives a list of the tetanus cases thus resulting during the past five years —

Tetanus Cases

	Blank cartridge	Crackers	Cannon	Firearms	Powder, etc	TOTAL
1903	363	17	5	3	27	415
1904	74	18	5	1	7	105
1905	65	17	4	5	13	104
1906	54	17	1	7	10	89
1907	52	8	6	1	3	73

In an editorial article in the same journal for the previous year (*Journal of the American Medical Association*, August 18th, 1906), it was pointed out that there are "the best grounds for believing that the great decrease in tetanus is chiefly due to improved care of the dangerous blank cartridge wounds. Proper cleansing and drainage have prevented many cases of tetanus, prophylactic use of antitoxin, the only certain safeguard, has prevented many more." In the same issue was published an article by Dr Schereck, of the Chief Dispensary, St. Louis, who treated the following number of 4th of July injuries —

	No of cases	Antitetanic serum	Deaths from tetanus
1903	56	No	16
1904	37	Yes	Nil
1905	84	Yes	Nil
1906	170	Yes	Nil

Dr Schereck's method of surgical handling of each case was as follows —

- 1 To incise freely every wound
2. Carefully and thoroughly to remove from the wound every particle of foreign matter
3. To cauterise the wound thoroughly with a 25 per cent solution of carbolic acid
- 4 To apply loosely a wet pack of 2½ (two and-a-half) per cent of carbolic acid
- 5 To inject into the cellular tissues of the abdominal walls the contents of a package of immunising serum containing 10 cc. Before injecting this serum, however, the skin was well scrubbed with soap and water, and washed with alcohol, after the injection the wound made by the needle was carefully sealed with cotton painted over with collodion.

In view of the above statistics there can be no doubt that in a majority of cases tetanus after injuries is a preventable disease.

It is, of course, open to those who do not believe in the virtue of antitetanic serum, to say that the good results shown in the above statistics are altogether due to the thorough surgical cleansing of the wounds. This may be so, and it is very desirable that figures should be published of cases treated with pure surgical cleanliness only, so that the results, as regards tetanus, may be compared with the figures from institutions in which the prophylactic serum is used in addition to ordinary surgical disinfection. The use of antitetanic serum has not proved a success for the treatment of lock-jaw once commenced, but there are good reasons for believing it to be invaluable as a prophylactic measure.

Current Topics.

RONALD ROSS AS A POET

OF the many men who have reflected lustre on the Indian Medical Service there is no one better known than Major Ronald Ross, I.M.S. (retd). All the world knows him as the one who gave us final and convincing proof of the causal relation of the mosquito to malarial fever. It has been more or less an open secret for some years that Ronald Ross had written poetry, and in 1906 appeared a modest volume entitled "In Exile by R. R. 1906" (Privately printed). We now learn from a short note in the *Journal A.M. Assoc.* that R. R. is Ronald Ross. The note we refer to is written by Dr. Wm. Mitchell of Philadelphia himself, a well-known literary man as well as physician. The little book by Ronald Ross is an interesting record of moods of mind, of

hope, despair and final triumph, and it is probable that but few of his brother officers in India knew how Ronald Ross passed his leisure time and refreshed himself after his arduous microscopic work in the hot climate of Madras or Calcutta

We may quote the following —

"This profit yet remains
Of exile and the hour
That life in losing gains
Perhaps a fuller flower
For on this desert soil
A blessing comes unsought—
Space for a single toil,
Time for a single thought
In humble way I move
Myself to little things,
The heated hands I prove
I watch the light that springs
Or fades in fevered eyes,
My only solace here
Not to be rich or wise
But to have done with fear

The following verses were written on the day on which he found the zygotes and the key to the malaria problem —

This day relenting God
Hath placed within my hand
A wondrous thing, and God
Be praised At his command
Seeking His secret deeds
With tears and toiling breath
I find thy cunning seeds,
O million murdering Death
I know this little thing
A myriad men will save
O Death, where is thy sting,
Thy Victory, O'grave!
Before Thy feet I fall
Lord, who made high my fate,
For in the mighty small
Is shown the mighty great

MAJOR SMITH'S OPERATION FOR CATARACT

In the October issue of that excellent periodical, *The Ophthalmoscope* (Vol V, No 10, p 553), appeared an article by Dr J Rutter Williamson of the Mission Hospital, Bhandara, C P, which will be read with interest by all who have followed the more or less vigorous discussion which has gone on in these columns on the merits of the operation of extraction of cataract in the capsule, which will ever be associated with the name of Major Henry Smith, I M S, of Jullundur

Dr Rutter Williamson has learned to do the operation in the best way, that is, by seeing Smith himself do it, and in a very interesting way he describes the method of operating, as well as the whole surroundings—certainly as he says "it is a wonderful sight" We strongly commend this article to the notice of all our readers

The appearance of such an appreciation in the pages of a leading international Ophthalmic

Journal will go far to ensure a fair consideration to the merits of Smith's operation

The advantages and drawbacks to the Jullundur operation are summed up by Dr Rutter Williamson as follows —

"The advantages of the operation might be summarised as follows —

1 No after cataract to be dealt with, causing the patient disappointment that the one operation was not enough, and necessitating further absence from home and work, as well as the risks attendant upon the treatment of such after cataract We must all know how often a patient refuses to have anything further done, and then his poor visual acuity discredits the surgeon and hospital where he was first treated

2 Lessened risk of iritis from there being no lens matter left behind

3 No need of introducing instruments, such as iris forceps or irrigator This minimum of instrumentation must also mean a minimum of risk of inflammatory and infective processes

4 The ease with which immature cataracts can be removed at one sitting

5 The shortened period of stay in hospital, due to the absence of complications The rareness with which atropine is used is striking, and is in a large hospital an appreciable saving of the assistants' time

6 One might also add that the avoidance of a conjunctival flap in Smith's operation is certainly convenient in keeping the field clear from blood, and it does not seem to make healing the least bit slower I rather doubted this at first, but after further experience I think that, as far as one can judge, the healing with the corneal flap seems to be every whit as rapid and as sound

Against the operation, however, must be put —

1 Greater skill necessary for its performance

2 An intelligent assistant requisite

3 A real, though not a vastly greater risk of vitreous escaping than in the usual capsule-laceration operation This risk, like many others in surgery, becomes less as the operator becomes more expert But when every allowance is made, it does constitute one of the real dangers of the operation As a rule, if Smith's directions are followed, the amount escaping is small

4 Possibly consecutive upon 3, is also a greater risk of remote retinal detachment

5 Another possible, though as far as I can find out, and at present unproved risk is, that of great astigmatism from the larger flap requisite

6 The larger wound certainly make iris prolapse more likely, if there is not an iridectomy performed as part of the operation

In closing, it would seem to be good practice, at first, to avoid extraction in the capsule of those bluish skim milk coloured lenses, which are known by experience to have very thin capsules, always to perform an iridectomy except in immature cataracts to take plenty of time in the expression of the cataractous lens, and in every case where after fair trial the capsule seems certain to burst, to scratch it and to extract in the way most familiar to you"

GANGOSA, A TROPICAL ULCERATION

UNDER the Spanish term Gangosa, meaning "nasal voice," Drs Musgrave and Marshall describe (*Philippine J of Sci*, Vol II, 4th August, 1907) a serious and destructive form of ulceration found in some tropical countries It is probable that cases of gangosa are more common than is supposed, for the illustration

of the case in the article above quoted is one which might well be mistaken for a destructive ulceration of the nose and palate due to either lupus or syphilis

The patient whose case is described by Musgrave and Marshall was a Filipino, male, aged 29 years. The disease is described as a chronic ulceration of the naso-pharyngeal tissues, including destruction of the palate, septum, turbinates, etc., together with extensive destruction and scar formation of the adjacent soft parts of the larynx, pharynx and nasal tissues. In this case there was also found tuberculosis of the right lung with a small cavity in the apex.

There is no doubt still much confusion as to the differential diagnosis of the various forms of tropical ulceration. Drs Mink and McLean have well described this disease, and an account of it under the title "Destructive Ulcerous Rhinopharyngitis" is given in the excellent new and up-to-date edition of Manson's *Tropical Diseases* (Edition, August 1907, p 575). The disease was first made known by the Spanish Commission which visited the Ladone Island in 1828, and the disease is very common in parts of the West Indies, e.g., Di Numa Rat has described 60 cases in Dominica and according to Leys 15 per cent of the population of Guam suffer from this horrible complaint. It is well known in Fiji, the Carolines and British Guiana, and in a recent visit to the Batanes Islands, a colony of isolated sufferers were discovered, who were regarded as a sort of lepers. It is probably known in Ceylon, and it is worth looking out for in India.

The disease is characterised by a slowly progressing ulceration, starting in the throat or soft palate, advancing upwards and forwards till the nasal passages are destroyed. In about ten per cent of cases the whole nose is destroyed. The disease usually starts as a mild sore-throat or a coryza, and the ulcer is at first superficial and covered with a greyish brown pellicle. The general health is not markedly affected even when the ulceration is extensive. The ulceration is limited to the throat and nose and similar ulcers are not found in other parts of the body. No cases have been observed in white men or in persons of mixed blood. Women are attacked more frequently than men.

Gangosa must be differentiated from other forms of chronic ulceration, such as tubercle, syphilis, yaws or leprosy. Its wide prevalence in a community will differentiate it from epithelioma. The diagnosis from yaws and from syphilis is admittedly difficult. Gangosa seems to be a disease *sui generis*, due to a yet unascertained micro-organism. It is worth looking out for cases such as the above in India.

THE DAMAGE DONE BY ITINERANT CATARACT COUCHERS

In the interesting article which we publish in the present issue Capt H Gidney, I.M.S., writes very strongly on the damage done by the itinerant "eye quacks" or couchers who roam from village to village in every province in India, and do incalculable harm by destroying many eyes which could otherwise have been properly treated by the Civil Surgeon and his assistants in the various Government dispensaries. No doubt these couchers have some successes, but, as a general rule, we believe their success is but short-lived and the not uncommon after-complications of their operations are attributed by the ignorant villagers to some other disease. At any rate, the coucher is gone and cannot be found again.

We invite correspondence on this subject, and we are of opinion that, if a sufficiently good case can be made out, it is probable that Government could do something to check the unrestrained practice of these people. Will therefore Civil Surgeons in all parts of India and Burma send us their experiences of these itinerant eye-quacks and their methods? We shall be glad to publish them.

RAT DESTRUCTION IN THE UNITED PROVINCES

We have in a former issue commented on the energetic way in which the Medical and Sanitation Departments of the United Provinces has taken up the work of controlling plague.

In a Resolution, dated 17th October, 1907, H H the Lieutenant-Governor issues instructions regarding the destruction of rats, as a measure for preventing the spread of plague. After commenting on the methods previously in vogue in those provinces, the Resolution goes on to say that the actual methods adopted will depend on local circumstances and the feeling of the inhabitants. We quote the following paragraphs of the Resolution *in extenso* —

Whatever procedure is followed it is most important that responsible officials should collect the rats as near as possible to the place where they are caught or killed, and that rewards should be paid for them on the spot. For each large *muhalla* of a town there should be at least one collecting depot. A good plan is to have a cart with barrels containing diluted phenyle or oil emulsion, into which the rats can be dropped and drowned. The phenyle or oil emulsion will kill the fleas as well as the rats. If the traps are put into the solution care must be taken to thoroughly wash them afterwards in order to remove the smell, which might keep other rats from entering them. The dead rats should be cremated under supervision. In some places it has been the practice to cut the rats' tails off when the rewards are paid. This has been done in order to prevent fraud, but if the bodies of the rats are burnt, as they should be, it is quite unnecessary.

8 The rat which is chiefly responsible for spreading plague is the black rat (*Mus rattus*), the common house-rat of India, and effort should be principally directed towards its destruction. Mice, though susceptible to plague, appear to take little part in spreading the disease,

and rewards should not be paid for them. The same remark applies to bandicoots. A useful pamphlet has been written by Dr. Hossack and published by the Trustees of the Indian Museum, Calcutta, which describes the different kinds of rats, and will be found of use in helping officials to identify the species which play the most prominent part in spreading plague. Copies of the pamphlet have been supplied to some district officers, and the Government hopes to be in a position to supply copies to others at an early date. Rats breed all the year round but a larger number of young rats are born during the months of June, September, October, and November. Destruction of rats at the periods preceding the time when the female rats produce their young will be of the greatest value.

9 In killing rats before plague has spread to any extent, it has been suggested that it is a good thing to start in a circle some distance from an infected house or locality and work inwards towards it, so as to establish a rat free area round an infected quarter. When the rats have been killed, all their holes should be stopped up so as to imprison any fleas that may be in them. Sulphur burnt in rat holes will also kill fleas and drive the rats out of them. Another method of ridding houses of rats, which is said to have been practised in England and in this country with success, is to pour coal tar into their runs, or to dip trapped rats in liquid coal tar up to the neck and let them loose in their runs in their endeavour to rid themselves of the tar they rub it off in all parts of their runs, and until the tar so left is dry no rat will enter that run again.

10 Difficulties have been reported in inducing certain classes of the population to assist in the campaign against rats. Jains and some castes among Hindus have a religious objection to the taking of animal life. If the people can be made to understand the value of rat killing as a means for preventing plague, it may be hoped that these objections will be gradually worn down in consideration of the infinitely greater value of human than animal life. District officers should use their influence to break down the prejudice against the killing of rats which the Lieutenant Governor is satisfied, from reports that have reached him, is not irresistible.

We commend this useful resolution to the attention of all medical officers concerned with plague.

THE ANTIPLAGUE CAMPAIGN IN THE CENTRAL PROVINCES

A RESOLUTION on the methods to be employed in the Central Provinces for the coming campaign against plague is published in the *C P Gazette* for October 5th. The following extract gives the key to the methods advocated —

"No method, direct or indirect, which has an effect in reducing the risk of infection of plague, or in mitigating its virulence, should be neglected, even though results from any one method may seem small. Thus in the matter of rat destruction, where poison is not popular, traps can be freely used, or if the keeping of cats is preferred, that may be encouraged. Disinfection has not been shown to be of any advantage, but the use of any verminicide effective against fleas is always worth a trial. There is no sense in dropping measures against rats, because inoculation is being pushed, or in dropping inoculation because measures for rat destruction are being employed. Every means available should be put into effect, and the aggregate results cannot fail to make themselves felt.

No measures that the Government can undertake can, however, be successful without the co-operation of the people. It is true that wild and absurd rumours that the Government spreads the plague have found but very little credence in a Province in which the people have only a short time back witnessed the tremendous efforts

made by Government to save life in the famines, that District officers as a body enjoy the full confidence of the people, and that, especially in the south of the Province, the attitude of the people has become more enlightened and they have developed a more intelligent appreciation of the objects and uses of the various plague measures. But there are (fortunately) thousands of villages in which plague is still unknown, and there is an enormous amount of ignorance and prejudice still to be combated. The greatest patience has to be exercised with the people in convincing them of the advantages of the measures recommended, once convinced, they are not slow to adopt them as has been evidenced by the success of inoculation in many places, the readiness to evacuate infected premises, and the assistance given by many in rat destruction. There is no better or more beneficent field for the display of a District officer's resource in dealing with the people, and for utilizing his knowledge of and influence over them for their best interests."

To encourage self-help among the people a short leaflet has been published describing in simple language the following three measures, viz., destruction of rats, evacuation and inoculation. On the subject of rat destruction the following remarks are made — "It has been found useful to concentrate the rat-killing operations round infected houses and mohallas, and in the case of rural areas in the villages surrounding an infected village, a full trial of "pesterine" (crude petroleum) should be made and village headmen are required to report at once the occurrence of any mortality among rats."

As regards evacuation, this is recognised as a necessary measure which sooner or later has to be taken and all local bodies are directed to keep a stock of materials in readiness for building temporary huts and shelters, and special arrangements are to be made for the industrial castes, so that they can continue their trades and a central godown under a Police guard is recommended for the storage of the valuables of the people.

On inoculation the following recommendations are made —

"A small special staff for inoculation work under Honorary Captain Morrison, who has great experience, and has met with much success, in this work, has been arranged and will be increased as necessity may arise. But an active share in inoculation work is expected from all Civil Surgeons whether any special staff is sent or not. Assistant Surgeons and Hospital Assistants will be selected under the orders of the Inspector-General of Civil Hospitals and trained for this purpose. It is most important that the means of inoculation should be available in all plague stricken areas, but it is even more important that no inoculation should be done except by thoroughly skilled and conscientious men, a careless operator may do great mischief by the neglect of any of the precautions which render inoculation harmless. The most suitable times and places for inoculation are —

- (i) in any village or quarter of a town in which rats have begun to die,
- (ii) in the rainy season when evacuation is most troublesome or impossible,
- (iii) at times when epidemics are just beginning,
- (iv) at times and places where the near approach of the disease in the neighbourhood makes the protection most desired,
- (v) in all epidemics as an alternative to evacuation in the case of persons reluctant to evacuate their houses."

DEC, 1907]

THE CHINA MEDICAL JOURNAL

WE have received a copy of, and arranged to exchange with, the *China Medical Journal*, which is the fourth number of the 21st volume of what was formerly known as the Chinese Medical Missionary Journal. The new edition is under the editorship of Dr W H Jeffereys, of Shanghai, and Dr R. T Booth, of Hankow, and is the medical organ of the Medical Missionary Association of China.

The number before us is an excellent one and begins by an article by Dr O. T Logan on some problems of tropical medicine which is of interest and value. He discusses ascariis and ankylostome infections, amœba coli, malaria, endemic hæmoptysis and gives excellent suggestions for microscopic study. Dr Neal Macleod of Shanghai writes of a case of suppurating mesenteric glands and of cirrhosis of the liver. Dr F W Goddard of Shaohsing describes two rare fasciolidæ, one of which is fasciolopsis buski, a case of which was recently (*I M G* October), described by Captain H Steen, I.M.S., the other fluke was distoma mathouisi only one case, report of which is on record.

Dr W H Jeffereys gives a good case with illustration of Xeroderma pigmentosa, and another skin case which is not definitely diagnosed. Dr C K Roys describes some cases of cerebrospinal fever which shows that the distribution of this disease is known in China also. Dr J L Maxwell of Formosa pleads for further contributions to our knowledge of the distribution of disease in China. We note an editorial article which does not think much of the new anti-opium plant which we may here quote as so little of scientific value is on record of this much-talked-of drug —

"The Imperial Institute which has done so much for science in general, and our knowledge of beriberi in particular, is investigating the Straits Settlements drug so much talked of as a new cure for the opium habit. The report of it which Mr Hinman gave at the conference was not promising, since it was directed to be prescribed with a certain fairly large quantity of opium ash, known to contain considerable active opium, and given in this combination until the cure was effected (See Conference Minutes, *C M J*, May 1st, 1907).

If in addition to being prescribed with opium the drug proves to have "no special constituents," we should regard the whole thing as a fraud, or at least a complete failure.

We have had far too much, in China, of sure cures for the habit containing this, that and the other preparation of opium or its alkaloids, and we are, speaking for the sentiments of the Conference and ourselves, through with them. To say that we regard any opium cure containing any form of opium other than in the light of a form of the reduction treatment, is putting the thing mildly. Opium ash may have the advantages of being unpalatable and the Seramban drug may make it more so, but we can hardly imagine that the combination would be any improvement over a known strength of the tincture combined with a judicious suggestion of assafœtida."

We wish the *China Medical Journal* under its new auspices a very successful career.

AMŒBÆ IN HEALTHY PERSONS

WE here frequently expressed the opinion that the question of the harmlessness or harmfulness of the amœbæ found in the human intestine is by no means finally settled. We may, therefore, as a useful contribution to this subject, quote the following account of the work done by Capt P M Ashburn and Lieut C F Chang, of the Medical Department of the Army of the United States, as members of the Board for the study of tropical diseases in the Philippines which we take from *The Military Surgeon* (September 1907, p 222).

The total number of healthy men examined to date has been one hundred, of which seventy-two, or seventy-two per cent have shown *Entamoeba coli* in their feces. These men were all American soldiers members of the Hospital Corps, serving at the Division Hospital, Manila, P. I. The following table gives the results obtained from these examinations to date —

Total Number Examined	100
Total <i>Entamoeba coli</i>	72
Total <i>Entamoeba dysenteriae</i>	2
Total <i>Trichomonas intestinalis</i>	16
Total <i>Cercaromonas intestinalis</i>	11
Total <i>Lamblia intestinalis</i>	6
Total <i>Anchylostoma duodenale</i>	2
Total <i>Trichocephalus trichiuris</i>	1
Total <i>Ascaris lumbricoides</i>	1
Total <i>Oxyuris vermicularis</i>	1

None of these men, with the exception of the two showing *Entamoeba dysenteriae* in their feces, had diarrhea or dysentery at the time of the examination and all denied ever having suffered from dysenteric symptoms since residing in the Philippines. Six of the men stated that they had had slight diarrhea at times always traceable to indiscretions in eating or drinking, but that they had never been upon sick report with it.

Of the seventy-two men showing *Entamoeba coli* in their feces, one had resided in the Philippine Islands for eight years, four, seven years, one, six and a half years, three, six years, four, five and a half years, one, five and one quarter years, two, five years, four, four years, three, three years, two, two and a half years, ten, two years, one, one year and ten months, two, one year and nine months, nine, one and a half years, thirteen, one year, and the remainder of seventeen, less than one year.

The two men showing *Entamoeba dysenteriae* in their stools were apparently in good health, but inquiry elicited the information that both were suffering from dysenteric symptoms at the time of examination and both were later returned to the United States with chronic amebic dysentery. At the time that we examined the feces of these men we knew nothing of the occurrence of dysenteric symptoms in them and our diagnosis was based entirely upon the morphological appearance of the amebæ observed in their feces.

It will thus be seen, that, contrary to the opinion of certain investigators, it is possible to differentiate *Entamoeba dysenteriae* from the harmless *Entamoeba coli*, as they occur in the feces of man, and that, therefore, such differentiation becomes of very great practical importance in the diagnosis of diarrheal condition of the intestines.

In order to determine how many of the men still on duty at the hospital who had been previously examined and were positive for *Entamoeba coli* still showed them in their feces, the following examinations were undertaken —

A Upon November 20th, 1906, twenty-eight men were re-examined, of whom twenty-three showed *Entamoeba coli* in their feces upon previous examinations,

of these twenty-three positive cases, eighteen, or seventy eight per cent, were still positive for *Entameba coli*

B Upon November 20th 1906, thirteen men were re examined, who had been first examined upon March 17th, 1906, eight months having elapsed since the first examination. Of these thirteen men, eleven showed *Entameba coli* in their feces March 17th, and nine or 81.8 per cent still showed them upon November 20th, eight months afterward. Not one of these men had suffered from the slightest diarrhoea during this time, and all had been on duty continuously at the hospital.

C Upon November 20th, 1906, seven men were re examined, who were first examined upon May 2nd, 1906 six months and twenty-two days having elapsed since the first examination. Of these seven men, five were positive for *Entameba coli* upon May 2nd, and five were still positive upon November 20th, 1906. Not one of these men had suffered from any symptoms of diarrhoea or dysentery during this time.

D Upon November 20th, 1906, eight men were re examined, who were first examined July 10th, 1906, four months and thirteen days having elapsed since the first examination. Of these eight men five were positive for *Entameba coli*, July 10th, 1906, and two or forty per cent upon November 20th. Neither of these men had suffered from diarrhoea or dysentery during this time.

As the result of our work in the examination of the feces of healthy men we conclude that in the Philippine Islands a very large proportion of white men are infected with *Entameba coli*, and that such infection, so far as we have been able to observe, does not result in symptoms of diarrhoea or dysentery. In many of the cases the amebæ disappear but in the larger proportion *Entameba coli* may be found even after the lapse of nine months, during which time the infected individuals have remained in perfect health as regards dysentery or diarrhoea.

We also conclude that *Entameba coli* differs very markedly from *Entameba dysenteriae* as regards morphology, and that it is possible to distinguish these two species of amebæ by their morphological characteristics as observed in fresh specimens of feces. We do not believe that the very large proportion of infections with *Entameba coli* which we have demonstrated can be explained logically by the theory of "latent infections," but only, as we have stated in a previous report, "by the fact that the nonpathogenic *Entameba coli* is the organism present in these cases instead of the pathogenic *Entameba dysenteriae*."

WE have received the first number (Volume I, No 1, October 1907) of a new Medical Periodical which, if it continues as it has begun, seems destined to take a high place in medical literature. *The Quarterly Journal of Medicine* (Oxford, Clarendon Press) is under the editorship of Wm Osler, the Regius Professor of Oxford, assisted by Dr Rose Bradford, Dr R Hutchison, Dr A E Garrod, H D Rolleston, Dr Hale White, with the help of such men as Clifford Allbutt of Cambridge, Finny and Little of Dublin, Gibson and Guiland of Edinburgh and many other well-known names.

The first number contains 13 valuable articles by R Muir, Cowan, Mann, Gibson, Hutchison, J Mackenzie, T K Monro, Osler, G Oliver, E I Spriggs, J H Drysdale and G A Gibson. It is intended to be devoted to clinical medicine and to give comprehensive and detailed papers only. The yearly subscription is 25s.

MANY of our readers will have received a circular from Surgeon-General A M Balfour, I M S (ret'd), of the India Office, commending to our notice the proposal to endow a prize for Pathology to be awarded to Lieutenants on probation who have gone through the course at the new Royal Army Medical College, Millbank, London. A sum of £400 is required, the two Medical Services (R A M C and I M S), each to contribute an equal sum. Subscriptions, which should not be larger than ten rupees, may be sent to any of the branches of Messrs Grindlay & Co. We need hardly say that we strongly commend this proposal to our Service readers and hope that the response from the Indian Medical Service will be prompt and satisfactory.

IN the *Journal R A M C* a case of kala-azar is reported from Crete. The parasites having been found in spleen films by Major W S Harrison, R A M C, at the Royal Army Medical College.

This is somewhat remarkable as the history given of the patient shows that he had lived in England till he went with his regiment to Crete.

THERE is some doubt apparently as to the correct pronouncing of Sir A E Wright's new word "opsonins." As a Dublin man and a classical scholar, we believe, that Sir Almroth derived the word from the Greek verb ὀψωνειν, "to cater for," the second "o" therefore is "long" and should be so pronounced (ω).

DR C L COLE (*Phil Jour of Sci*, Vol II, No 4, August 1907), shows that the parasite now known as *Necator Americanus*, is very common and is a great cause of ankylostomiasis anæmia in the Philippines.

By the courtesy of the author and publishers we have received an advanced proof copy of Major Leonard Roger's new book, entitled *The Fevers of the East**. We have not time to review this book for our present issue, and hope to do this fully in our next number. Meanwhile we advise our readers to send their orders for this very valuable book, as Messrs Thacker Spink & Co are to receive an instalment of one hundred copies immediately. The book is dedicated to the officers of the Indian Medical Service. It is handsomely got up, well printed on good paper and in large type. The temperature charts are beautifully executed, and the whole book is copiously illustrated.

There is a most interesting historical introduction on Indian fevers. The next seven chapters are devoted to fevers of long duration, viz —Kala-azar (being the Milroy Lectures for

* Oxford Medical Publications, Oxford University Press, 1907.

1907, delivered by Major Rogers in London), Trypanosomiasis and sleeping sickness, typhoid and paratyphoid fevers, Relapsing fevers, Indian and African, Malta fever, the presuppurative stage of amoebic hepatitis (a very original and valuable chapter), Epidemic dropsy, and unclassified long fevers. Then follow seven more chapters on the *short* fevers, viz — Malaria, dengue, plague, yellow fever, heatstroke, seven-day and three-day fevers, incidence of the specific fevers in the East, and a useful note on the technique of blood examination.

We most strongly recommend this book to all our readers.

Reviews

Tropical Diseases —By SIR PATRICK MANSON, KCMG, MD. Fourth Edition, thoroughly Revised and enlarged. Pp 876. Price 12s 6d net. London: Cassell & Co. August 1907.

MANSON'S *Tropical Diseases* is one of the most successful medical books published within the present generation. The First Edition, which appeared in May 1898, was good and every successive edition has been better, till now, within ten years of first publication, it has reached its Fifth Edition and its eighth republication.

It is hardly necessary to comment upon the contents of this invaluable little volume. Its merits are known to all our readers and all have long recognised its value.

The remarkable development in the study of what are conveniently called "tropical" diseases has made so much progress, that it is only to be expected that the present volume contains much more than its predecessors.

The chapter on Malaria runs to no less than 150 pages, and literally contains all that is known to be of value on this important subject.

A new chapter of 28 pages is given to Trypanosomes and their infections. An excellent account is given of human trypanosomiasis and its dreaded last stage, sleeping-sickness. To this is added, in small type, a brief but clear account of the trypanosomes of animals and an excellent description, with a beautiful coloured illustration of the Tsetse-fly and ten species of Glossina.

Under the heading *Kala-azar* an admirable chapter is devoted to that disease and to the Leishman-Donovan body, and the work of all observers in India is noted, down to Captain Patton's recent observations on the bug as a possible carrier. The chapter on Relapsing fever is excellent, there is a discussion on the biological nature of the spirochaeta, and the difference between the *spirochaeta duttoni* or African species, and the Indian species is made clear. For the Indian species the name *S. carteri* has been proposed, a name we gladly accept as a tribute to the great work of Vandyke Carter, of

the Bombay Medical Service, one of the pioneers in the study of Relapsing fever. This is followed by an excellent account of ticks, with a good coloured illustration of four species.

The Yellow fever chapter is up-to-date, and the possible danger of the spread of this disease to other countries when the new Panama canal is opened is emphasised.

We turned with interest to the chapter on Blackwater Fever, which is well worth study. Sir P. Manson does not accept the quinine theory, but inclines to the view that the disease is specific, and (as we said in a recent article) akin to the Redwater fever of Texas cattle. There is a good account of dengue, but up to date as the book is, it went to press too early for use to be made of the recent Manila researches into the etiology of this curious disease. (See *I M G*, Vol 1907, p 304.)

The account of plague is good and runs to 32 pages. That of Malta fever is also complete, but its considerable prevalence in Upper India is hardly sufficiently emphasised. Among the "Imperfectly differentiated fevers of the tropics" will be found accounts of those classified in 1894 by the late Colonel Crombie, RMC, as well as the "three-day fever" of Captain McCarrison of Chitral, and Leonard Roger's "seven-day fever of Indian ports." A very good chapter is given on Pellagra, but we are very doubtful as to the solitary case recognized in Bihar, as no other cases are on record in India. A chapter on Lathyrism is wanting, but though this is a very common disease in India, it is by no means confined to India.

The chapter on Heatstroke is but little changed, and Sir Patrick Manson still clings to Dr Sambon's account of "Suiasis," a view which has received very little support elsewhere. The 17 pages devoted to Beriberi are all good and the discussion of the various theories of this the most mysterious of all tropical diseases is complete and as satisfactory as is possible. Kenneth Macleod's account of epidemic dropsy is fully given, and we think that this disease bids fair to be more completely recognized as an entity, and we hope that the recent reappearance (September 1907) of probable cases of this disease in Calcutta, Comilla, and on the Darjeeling tea gardens will lead to its further investigation.*

The chapter on cholera contains nothing new of importance, but is altogether good. The 42 pages devoted to dysentery are none too many for a full consideration of one of the most important diseases of the tropics. Manson provisionally divides dysentery into three types, "bacterial," "protozoal" (in this are

* At the time we write it is by no means clear whether the epidemic in the Alipore Reformatory, Calcutta, in the Jail at Comilla, and on the tea gardens of Kurseong and Darjeeling is to be attributed to beriberi or to epidemic of dropsy. We have heard of and seen cases strongly resembling both diseases —ED, *I M G*

included amœbic dysentery, that due to balantidium infection), the "terminal" forms (as long ago we called them), in Leishman-Donovan infection and in malarial cachexia, and thirdly, the "verminous" (an uncomfortable term to describe the forms due to the schistosomata, etc.) This chapter gives a very good account of recent work, but we do not believe we have yet approached any finality in the current views on the protean disease or complex of symptoms, clinically known as dysentery.

There is nothing new to record in the account of bill diarrhoea, but we are glad to see no mention of the impossible "mica in the water" theory, recently revived by Dr. Andrew Duncan (M.S., 1904). The chapter on Spire was always good, and all that is known of this formidable complaint is detailed.

Tropical liver and abscess of that organ receive adequate treatment in 40 pages. The author's method of tapping with a trocar and canula is described, but we do not think it has found favour with surgeons in India, who prefer the more thorough operation. It is a pity that some surgeon in India with large experience of liver abscess does not write a complete paper on it. Leprosy is fully described, and in the chapter on Yaws is described the ulcerous rhinopharyngitis which we comment on elsewhere as "Gangosa." The chapters on Verruga Peruviana, ulcerating granuloma and oriental sore, contain nothing very new in this edition.

The chapters on animal parasites and the diseases associated with them were always a markedly good feature of this book, and we need only say that they are as good and as up to date as ever. A more complete chapter than that on filariasis could hardly be written, and all other parasitic infections are equally thorough. The chapter on mycetoma is very complete. We notice that the description of that troublesome form or forms of ringworm known universally in India as Dhobie's itch is still quaintly called *dhobie itch*. Whether the Indian washerman had anything to do with its causation or not, his name is given to the disease, and it should be called *dhobie's itch*. The minor diseases as, ponos, pedia, pinta, goundow, etc., are all well described, and this excellent volume ends with a most useful appendix on the protozoa of the blood of vertebrates and gives short clear accounts of the hamogregarinidæ of animals, the plasmodiæ and what are here called the "spirochaudinidæ," as for example, the *leucocytozoon* and the *treponema*. This is an excellent but very brief description of the most important protozoa.

In conclusion, we may refer to the excellent plain and coloured illustrations of the book, and can heartily recommend this volume to all our readers as the most complete volume in print for its size on the diseases of the tropics. With this new Edition and Allbutt's Vol. II, Part 2, the tropical physician is completely armed.

Trypanosomes and Trypanosomiases—By LAVERAN and MESNIL. Translated by D. Nabarro, M.D., pp. ix+539. Illustrated 81+1 coloured plate. Royal 8vo. Price 21s net. London: Baillière, Tindall & Cox, 1907.

THIS valuable monograph on the subject of trypanosomes only appeared three years ago in the French Edition by M. M. Laveran and Mesnil, and at that time it contained all that was known on the subject. During the past three years, however, an immense amount of work has been done in this particular branch of pathology in Europe, Asia, Africa and America, no doubt stimulated by the fact that the fell disease, sleeping sickness, is one stage of human trypanosomiasis. The result of this amount of work has been that the present work is not only a translation of the original work of M. M. Laveran and Mesnil, but it has been brought thoroughly up to date and contains an enormous amount of additional matter. The English Editor, Dr. Nabarro, is well known as a capable investigator and served as the Royal Society's Commissioner on the Uganda Sleeping Sickness Commission, 1903. Among the most important additions are the sections on the spirochaetes, on the Leishman-Donovan bodies, on new trypanosomes in mammals, birds and bacteria, etc., and on the prevalence of human and animal trypanosomiasis. The additions are so numerous that the new volume is twice the size of the original edition in French. It is an exceedingly valuable book and must long remain a work of reference, indispensable to all who are working at these important and interesting subjects. The book is very handsomely got up, well printed on good paper and clear type, and the references to current and recent literature are very complete and up to date. The sections on the spirochaetes are very good. These organisms are "possibly closely related to the family of trypanosomes and may in some cases be even a stage in the life cycle of a trypanosome." The English editor then refers to the group of spiral organisms which closely resemble the genus spirillum of bacteria. The development of the Leishman-Donovan bodies is well described and due credit given to Leishman, Donovan, Roger, Chatterjee, Christophers and Patton, for their work on this subject. The systematic position of this parasite is far from settled, and for the present the editor adopts R. Ross's name *Leishmania-Donovani*.

A System of Radiography with an Atlas of the Normal—By W. IRONSIDE BRUCE, M.D., Physician to the X-Ray and Electrical Departments, Charing Cross Hospital, Hon. Radiographer to the Hospital for Sick Children, Great Ormond Street. Pages xi+110, size imp. folio. Price 15s net. Published by H. K. Lewis, London, 1907.

THIS is a work of great utility both to the teacher and the student of radiography. It is

hard to make the ordinary surgeon realize, that, even given a perfect knowledge of anatomy, every skiagraph is by no means easy to interpret. Such a work as the above will much facilitate matters by providing standard reproductions of the normal. Dr. Ionside Bruce is to be congratulated on being one of the first to produce such a work in English.

The Atlas consists of 108 plates illustrating Radiographs, and the methods by which they were obtained. The Radiographs, representing all parts of the body at the ages of 5, 15 and 25 years, are distinctly good, considering that they have lost a good deal of detail in reproduction, and no touching-up has been permitted. The chief value, as claimed by the author, is that the Radiographs have been obtained under definite and known conditions, with reference to well-marked anatomical landmarks. Skiagrams taken under exactly similar conditions can therefore be compared with them and any abnormality readily detected.

Several Atlases dealing with Radiographs have appeared on the Continent, such as "Röntgen Atlas of Orthopædic Surgery" by Drs. A. Hoffa and L. Rauenbusch, and published by Ferdinand Eike of Stuttgart. It is to be hoped that the works on the same lines will soon appear in English dress, and Dr. Ionside Bruce may well, encouraged by his present success, give us some X-ray reproductions of abnormal conditions. If these could be stereoscopic, then value would be greatly enhanced.

Nature's Hygiene and Sanitary Chemistry.—

By C. T. KINGZETT, F.I.C., F.C.S., Fifth Edition.
Pp. xvi + 527. Demy 8vo. Price 7s. 6d. net.

It is hardly necessary to seriously criticise a book which has reached its fifth edition, but we are not convinced of the *raison d'être* of this volume by Mr. Kingzett. It is a combination of elementary organic chemistry and physics with a sprinkling of bacteriology and was originally intended when published in 1880 to fill a demand for popular scientific literature. It has chapters on a variety of subjects, air, rain, radium, atomic weights, the atmosphere, respiration, ventilation, oxidation, natural decay, putrefaction and micro-organisms, drinking-water and water-supplies, sewage, and sewage disposal, infectious diseases, phagocytosis, disinfection, treatment of the sick, foods, malarial fever, and the sanitary properties of the eucalyptus trees, essential oils, pine and camphor forests and industries connected therewith.

It certainly contains a large amount of useful information which the lay public would be the better for understanding, but we cannot think the book will be of much use to medical men.

For medical men the chapters on malarial fevers and the many virtues attributed to the eucalyptus and turpentine-giving trees is of interest. Its value as regards the malarial fevers is not great, it mentions in a doubtful way

Laveran's "claim" to the production of malarial fevers by the plasmodium malarie, but most of this chapter is devoted to a collection of views on the eucalyptus tree which we think has been long looked upon as a not very important factor in the campaign against malaria. The old case of the Tre Fontane near Rome is described, and it is seriously claimed that the protection afforded against malaria by eucalyptus trees is "largely due to the essential oil, which is given off in a vaporous condition from the trees," and no doubt "also to the action of the trees in absorbing water from the soil," an opinion supported by Manson (*Latest edition*, 1907, p. 131).

We cannot follow the author in his account of the virtues of many other essential oils, nor into his account of the manufacture of "Santal fluid." No doubt the book has its uses, but it cannot be recommended to medical men who can find similar information in many other text books.

Manual of Practical Anatomy.—By D. J. CUNNINGHAM, M.D. 2 vols. Fourth Edition. Edinburgh and London: Young & Pentland, 1907.

THIS well-known manual by a teacher, so well known in the schools of Dublin and Edinburgh as Dr. D. J. Cunningham, needs but little recommendation to students in India. Of all the practical dissecting manuals this is well known as one of the very best, and Dr. Cunningham's long experience as a teacher of anatomy has enabled him to produce a manual which anticipates in the highest degree the needs of the student in the dissecting room. The present volumes differ from the third edition, chiefly in the chapters dealing with abdomen and thorax and in the addition of a number of new illustrations. These illustrations were a feature of the third edition and coloured as many of them are they are a very distinct help to the student. We know of no manual of practical anatomy that can be more safely entrusted to the student.

Merck's Annual.—Darmstadt, May, 1907.

It is hardly necessary to recommend to the notice of our readers the 20th issue of Merck's Annual Reports. This well-known Darmstadt firm every year publishes the volume in which will be found a review of the literature about all sorts of new drugs. The Annual is most complete, all the drugs are given in alphabetical order, there is a complete index and a full bibliographical index.

For the practising physician who wants to keep himself well up in the latest productions of the pharmaceutical art this Annual is indispensable.

The Cause and Prevention of Beri-beri.—

By W. LEONARD BRADDON, M.B., B.S., F.R.C.S., State Surgeon, Negri Sembilan, Malay. 8vo. Pp. xiii + 544. Price 21s. Messrs. Rehman, Ltd.

In a work bearing the above title, consisting largely of a report submitted by him to the Colonial Office, Dr. Braddon claims to have

solved a problem which has vexed medicine for centuries, viz, the etiology and prophylaxis of beri-beri. From abundant evidence which he brings forward, and by a process of elimination with respect to other alleged causes, he deduces that "beri-beri" is a grain intoxication, the result of consuming a poison contained usually in rice and its derivatives, but sometimes in other cereals, and possibly at times in maize, sago, tapioca and even in meat.

He holds that there is a strong analogy between the disease and the condition (so closely resembling it) known as ergotism which is produced by the ingestion of diseased rye. He thus considers that all that is needful for prevention is a liberal and wholesome dietary from which rice and its extracts should be excluded, except in places where rice forms the staple food when that article should only be used in the cured condition.

That his deduction is justified by an able digest of the premises offered there is no gainsaying, but we venture to think that there are many authorities who would question the completeness of the premises, and, consequently, the soundness of the syllogism.

British troops in places like Aden and Naval men in similar localities suffer from the disease, yet rice forms a very small percentage of their diet, and there can be no doubt that even that amount would be of the very best quality. We have heard it stated that rice does, at a certain period of its life history, contain a poison, and it is the practice in India to keep each crop for some months after it is garnered before bringing it into use. Persons not observing this precaution in places where rice is the staple food might conceivably become lowered in resistance, and apt to contract specific diseases. It can therefore readily be admitted that such rice might powerfully predispose to beri-beri in the areas to which that affection is common, but that it is the sole or exciting cause requires, we think, more proof, and Dr. Braddon's excellent work should stimulate all those interested to carry out still further experiments in the direction indicated by him.

Whether or not his conclusions come to be accepted as final so far as the etiological aspect of the malady is concerned, we have no hesitation in classifying his monograph as an extremely valuable contribution to the literature dealing with beri-beri from other points of view, and would strongly recommend it to the profession generally and particularly to those who are likely to come into contact with cases or to have to deal with outbreaks of the disease.

The Practical Medicine Series—Vol. II, General Surgery. Edited by JOHN B. MURPHY, A.M., M.D., LL.D., Series 1907. The Chicago Year Book Publishers. Sole Agents in United Kingdom, G. Gillies & Co., Glasgow.

THIS year-book on surgery consists of abstracts of articles which have appeared in American,

British, French and German medical journals. The list of subjects embraced is very large, and it is impossible even to refer to most of them, one can merely select a few and briefly epitomise them. The subject of the surgical treatment of cancer is one which has claimed much attention during the year. Halstead's principles are applied by the Mayos to cancer of the stomach, and one of the best articles in the book is theirs on resection of the stomach with removal of its lymphatic drainage area, illustrated by five full page plates. Another article by the same surgeons on cancer of the rectum dealt with on the same principles is very good, they use a combined abdominal and perineal operation.

Similarly, J. Hutchinson, Jr., has written on the systematic clearing out of the submaxillary triangles in cancer of the lip, he points out that here the primary disease rarely kills by itself, but that the secondary deposits break down with remarkable rapidity. Cheate has written an important article on the early diagnosis of mammary cancer, and there are others on treatment by Doyen's serum and typsin. Arterial anastomosis by suture accounts for two papers, it is an important subject, the technique having been instituted ten years ago by Murphy. Venous suture and that of the thoracic duct are the subjects of other papers. Prominence is given to Murphy's line of treatment in general suppurative peritonitis. Murphy has experience of 40 such cases with only one death and that from pneumonia. The treatment may be summed up as rapid closure of the perforation, drainage of the pelvis, the maintenance of a practically sitting position and the slow administration by rectum of large quantities of normal saline solution (he has given a child as much as thirty pints in 24 hours, all retained and absorbed). Cheyne on hepatoptosis and O'Malley on omental suture for ascites are interesting, Murphy's comment on the latter is that he has found the ultimate curative effects so unsatisfactory that he has practically abandoned it. The papers on bile duct and pancreatic disease make profitable reading, and advance has taken place during the year in the technique of uretero-rectal implantation. Another interesting point emphasised by Eliot is that the symptoms of renal colic are more often caused by nephroptosis with kinking of the ureter than by renal calculus. The Mayos have produced figures to show that "no loop" gastrojejunostomy is probably the form of that operation which will hold the field in the future. In the central nervous system the most interesting points are a paper by Victor Horsely on the technique of operation on the brain, and a note by Murphy on the irrigation of the spinal meninges by means of an opening in the dura mater over the brain and a second one over the sacral theca, with through irrigation from one to the other. One more practical point which the editor's experience enables him to offer is the injection of formalin 2%, iodoform 10%.

glycerine 88% into tubercular cavities, whether joints, tendon sheaths or pleural cavity. He also uses it in acute infections of joints not associated with osteomyelitis. Its action he describes as little short of marvellous.

In the case of a large number of diseases it is much more difficult for the practitioner in India to keep himself abreast of the times, than it is for the medical man at home. This excellent book can be thoroughly recommended as a valuable addition to the library, and a great aid in meeting this disability. It is unhesitatingly recommended as a very useful and handy book.

Post Graduate Clinical Studies for the General Practitioner.—By H. HAROLD SCOTT, M.B., &c. Pp. x + 166, 35 Diagrams. Size Demy 8vo. Price 8s.

THE contents of this book consist of a number of papers read at meetings of various medical societies. They mostly discuss the diagnosis of subjects which are notorious pitfalls, such as that of subdiaphragmatic abscess, pleural effusion, disseminate sclerosis, and the causation of apoplexy. A paper on the naked eye examination of fæces is helpful, but one would be glad to know that it is not upon this point alone that the author has diagnosed four cases of a febrile typhoid. About half the book is taken up with an essay on Syphilis in the Army, written for the Alexander Memorial prize, but never submitted. It is accompanied by a number of diagrams illustrating the incidence of venereal disease on soldiers in different parts of the empire. The essay is eminently reasonable, and contains valuable suggestions for the lessening of this scourge in the army.

Hygiene and Public Health.—By L. C. PARKES AND H. R. KENWOOD. Third Edition, Revised. Pp. xi + 620. Demy 8vo. Price 10s. 6d. net. London, 1907. H. K. Lewis.

THIS well-known handbook on hygiene has now reached its third edition under the joint authorship of Dr. Parkes and Kenwood. It has been carefully revised and some new matter added. The page of the book has been somewhat enlarged to increase the space without undue bulkiness. The result is an excellent manual on the subject of hygiene and public health, eminently fitted for practitioners who are not specialist health officers and for students.

It is hardly necessary to give an account of the contents of this book. We have read most of the chapters with interest and profit. The chapters on refuse and sewage disposal, that eternal question which becomes more difficult with increasing civilization and increasing town life, is good. After giving an account of the various biological methods, the following apposite remarks are made—

"What is essential in the working of a natural process is for the superintendent of the works to fully appreciate that he has countless colonies of living, working

units under his control. Their work must always be regulated according to their powers, and sufficient and periodical intervals of rest must be allowed them between the regular periods of rest. Then, and then only, will they attune their powers to the work they are called upon to perform, and so establish that equilibrium between intake and output which is so easy to maintain, and so difficult to regain when once lost."

On the question of the effluent our authors state that—

"There is no evidence of the elimination of the micro organisms characteristic of sewage by any process of filtration in bacterial filter beds. There are fewer micro-organisms of intestinal origin than in the effluents from most artificial processes yet any sewage effluent must be regarded as potentially dangerous. All effluents should conform to the following requirements, they should contain but little suspended organic matter (certainly not more than one part per 100,000), they should possess no odour of sulphuretted hydrogen, and there should be no physical evidence of putrefaction when they are incubated for a week in a "closed vessel at 80° F."

The question of the biological disposal of sewage is far from settled in India. In the neighbourhood of Calcutta there are many excellent installations of this kind and many are working well, the danger is that the warning in the first paragraph quoted above is liable to be lost sight of, for installations built and intended for the use of, say, 2,000 workmen cannot be expected to work satisfactorily if they are used by a much larger number of persons.

We have selected at random this one chapter but any other might have equally easily shown the teaching of this book. The chapter on vital statistics is excellent, and Chapter XIII gives a lot of useful extracts from the Public Health and other Acts on sanitary law and administration.

We can strongly recommend this to Civil Surgeons and regimental medical officers as a sound and reliable book. It is well printed, of convenient size and its price is only 10s. 6d.

A System of Medicine.—Edited by T. CLIFFORD ALLBUTT & H. D. ROLLESTON. Vol. III. New Edition, October 1907. 8vo. London. Macmillan & Co. Price, 25s. net.

THE New Edition of Allbutt and Rolleston's *System of Medicine* is appearing with great regularity. This the third volume is really the fourth volume of the new issue, as the admirable volume on Tropical Diseases which we have already reviewed is really the third and the present volume which deals with "general diseases of obscure origin and diseases of the alimentary tract and peritoneum."

The present volume (Vol. III) has undergone very considerable re-arrangement and the most important articles have been rewritten. Dr. Garrod's excellent articles on rheumatoid arthritis, osteoarthritis and other joint affections are entirely new. The distinction drawn in these articles between rheumatoid arthritis and osteoarthritis is quite new and important. Dr. Batty Shaw has provided a new article on pulmonary osteo-arthritis, and Dr. Poynton has a new

article on achondrioplasia. The great chapter on gout originally written by the late Sir W. Roberts, and also the late Dr. Ralfe's account of diabetes insipidus have been thoroughly revised by Dr. Rose Bradford. Mr. Walter Spencer has rewritten the article on diseases of the mouth, and the three chapters on appendicitis, intestinal obstruction, and visceroptosis formerly contributed by Sir Frederick Treves have also been rewritten by Drs. Lockwood, Barnard and A. Keith respectively. The difficult subject of the bacteriology of diarrhoea has been written by Dr. Slater, and the late Mr. Allingham's article on the differential diagnosis of diseases of the anus and rectum has been put for revision into the capable hands of Mr. Mommery. Dr. Acland has given a comprehensive article on subphrenic abscess and other forms of peritoneal abscess.

The whole volume therefore will be seen to worthily represent modern medicine. Perhaps of all the articles we were best pleased with that on gout. The short article on sea sickness by Dr. Stocker and that on mountain sickness by Dr. Clifford Allbutt are also excellent.

The volume can be confidently recommended to our readers as safe, complete and reliable and the new edition of this great System of medicine is destined to remain the leading work on medicine for another ten years at least.

ANNUAL REPORTS

MADRAS HOSPITALS

THE report for 1906 on the Hospitals and Dispensaries of Madras was submitted by Surgeon General W. R. Browne, M.D., V.H.S., C.I.E., I.M.S., on 12th July but only reached our table late in October. At the end of 1906 there were in all 610 hospitals at work, and 14 per cent of the people sought relief at them. There was a greater prevalence of the more serious diseases such as fever, respiratory diseases, cholera, dysentery and diarrhoea. During the hot months of the year an outbreak of catarrhal ophthalmia led to a great increase in attendance at many hospitals.

Many useful and necessary improvements were carried out during the year at the Madras General Hospital, the Ophthalmic and at the Leper Hospitals, etc., as well as in many institutions in the mofussil districts.

The following on midwives is worth reproducing—

"District returns show 353 midwives attached to mofussil institutions as having attended 30,233 labour cases. These women form a very useful class and are trained either in the Maternity hospitals in Madras or in the head quarter hospitals in the mofussil districts. When not engaged in attendance on lying-in patients, they assist the medical officers in the examination of female patients and help in the dressing of women and children in the wards or the outpatient department. There is a large demand for suitable qualified native midwives but the fact that a good many vacancies remained unfilled during the year shows that the demand still exceeds the supply and points to the advisability of local bodies continuing their efforts to have suitable women properly trained for the work that in many places is very highly appreciated by their fellow countrywomen."

Turning to statement G, which shows the surgical operations performed, we may extract the following—tumours, 1,950, cysts, 805, abscesses, 55,050, bone operations, 4,590, operation on joints, 1,764, amputations, 652, operation on the skull, 25, on face, nose, etc., 1,163 (including 4 for restoration of nose, 29 harelips, 774, polyp, nasal granuloma, 44, tonsils, 38, uvula, 102, dental operations, 43,812, operations on the eye, for trichiasis, 292, for granular lids, 10, for squint, 106, for pterygium, 255, lacrimal obstructions, 11, dacryocystitis, 391, for corneal ulcer, 70, for cataract, 1,232, for laceration of opaque capsule, 69, for foreign bodies, 1,495, for staphylococci, 13, excision of eyeball 195, eversion

of eyeball, 35, optic ciliary neurectomy 9, operation on the ear 87, on larynx, pharynx, etc., 9, excision of the breast, 49, pleural tapping, 57, tapping abdomen, 818, abdominal sections, 43, operations on stomach, 6, on intestines, 13, appendix, 4, enterotomy, 6, colotomy, 4, intestinal obstruction, 10, hernia, 337, for abscess of the liver, 50 (cured 27), nephrectomy, 1, exploratory operations, 10, fistula in ano 363, for piles, 355 (methods not given), prolapse of rectum, 543, bladder tapped, 29, cystotomy, 14, calculi by lithotomy, 72, by lithotomy, 6 (showing great rarity), urethral calculi, 124, stricture of urethra, 874, phimosis 2,583, paraphimosis, 2,135, varicocele, 22, for hydrocele (methods not mentioned), 3,085, elephantoid scrotum 100 (3 died), ovariotomy 35, uterine appendages, 10, removal of uterus, 8, in all 1,933 operations on female generative organs, and 2,290 obstetric operations, or a total of all operations, 175,076 in fine surgical record.

VACCINATION

BENGAL

THE annual notes on Vaccination in Bengal for the year 1906-7 are submitted by Lieutenant Colonel F. C. Clarkson, I.M.S., the Sanitary Commissioner.

The total number of operations performed was well over 2 millions and showed a decrease in primary cases attributed to high prices and reluctance to pay the vaccinators' fees, on the other hand, there was an increase of 16 vaccinations. The Sanitary Commissioner thinks it safe to say that infant vaccination is making steady progress from year to year, and in Municipalities 872 per mille of the infant population was protected during the year.

In the Annual Vaccination Depots in Calcutta and Dujeeing 1,373 and 235 calves were vaccinated against 1,621 and 210, respectively, of the previous year. The quantity of lanoline paste manufactured was 293,250 and 72,575 grams, respectively, against 223,322 and 61,823 grams, respectively, of the previous year.

We may also quote the following paragraph from this report—

"During the beginning of the last vaccination season, a course of instruction on (1) the principles of asepsis, (2) the proper method of vaccination, (3) practical instruction in the preparation of vaccine lymph from the calf, and (4) the dangers of arm to arm vaccination, was given by the Sanitary Commissioner, the Deputy Sanitary Commissioner, Bengal and Orissa Circle, and the Civil Surgeon of Cuttack to the Inspectors of Vaccinations, at Patna, Calcutta and Cuttack. The instruction received by the Inspectors was imparted by them to the Sub-Inspectors of Vaccination and the Vaccinators. Antiseptic vaccination was also introduced throughout the Province. The result of the system, on the whole, is reported to be satisfactory, sore arms having greatly diminished. The Civil Surgeons of Gaya and Cuttack, however, do not agree in this view. The system of realization of vaccination fees through the agency of the village Panchayat, has not been attended with the degree of success expected of it. In some districts, viz., Burdwan, Bankura, 24 Parganas, Murshidabad, Jessore, Shikhar, Saran, Dubhangra and Balasore it is said that no effective help was given, while the Civil Surgeons of Nadia and Champaran report that the fees realized through the Panchayats had to be recovered from them under great pressure. The system of granting rewards to vaccinators, however, has created a healthy stimulus to work and to competition among the better class of vaccinators, and I therefore recommend its continuance."

THE HONGKONG ANNUAL HEALTH REPORT

THIS report is submitted by the Principal Civil Medical Officer. The population of the colony was as follows on Nov. 20th, 1906—

Non Chinese Civil Community	12,415
Chinese, including floating population	307,388
Army	4,537
Navy	4,693
Total	329,033

The general birth rate was only 4 per mille, but the civil population is essentially a male adult one (males 70 per cent). The total death rate was 25 per mille, and only 14 per mille for the non Chinese community. It is not clear to what extent more careful diagnosis apart from ANTI-MALARIAL MEASURES is responsible for the reduction from 490 (1897-03) to 240 during past three years.

There was a recurrence of plague in 1906 there being 893 cases recorded. The following note on AMBULANCES for

the conveyance of cases of infectious disease is worthy of the attention of many Indian Municipalities —

"These are all hand ambulances, on bicycle or light wooden wheels, with rubber tyres and of the St John Ambulance pattern. Those stationed in the City are in the charge of the various Plague Inspectors, whose duty it is to see that they are kept clean and efficient, and that they are disinfected after use. At the Sanitary Station coolies are always available for the conveyance of these ambulances, but at the other stations the Police must obtain volunteers or engage street coolies for this purpose, and must then notify the Sanitary Department that the ambulance has been used, so that it may be cleansed at once. It is proposed to place additional ambulances at other stations as soon as the ambulances can be built."

There is an interesting note on "PLAGUE MEASURES," from which we learn that the staff of 4 European Inspectors, 11 Coloured Foremen Interpreters and gangs of coolies are employed both during the non epidemic as well as the epidemic period. Drs Henley and A. Gibson give an interesting report on the rats and rat fleas found in Hongkong. The following table shows their comparative frequency —

"Taking the undecomposed rats which have arrived at the Public Mortuary during the last two months is indicative of the comparative numbers found of each species in Hongkong, we find roughly the following percentages —

Black rats	<i>Mus rattus</i>	12 per cent
Brown rats	<i>Mus decumanus</i>	18 "
Mice	<i>Mus musculus</i>	48 "
Musk rats	<i>Sorex giganteus</i>	2 "
Undetermined rats, size of <i>Mus rattus</i>		5 "
Baby rats, undetermined		15 "

As for fleas, the mouse flea (*Ctenopsylla Musculi*) is (in December) the one most commonly found on rats and mice, it is very frequent on *M. rattus*. *P. serripes* vel *felis* the dog flea, has been found once on *M. decumanus*, and also on a man and a dog. *P. cheopis* has been caught in large numbers, as many as 40 on two rats of *decumanus* species, also on *M. rattus* and the "MUSK RAT" *Sorex giganteus*, but is not a rat but rather a mole. As this musk mole is rather common in India and often mistaken for a rat, we may quote the description of the Hongkong *Sorex* —

"It is purely nocturnal in its habits, has a peculiar bat-like cry and frequents sewers, drains, and garbage heaps where it feeds on decaying animal matter. It sometimes finds its way into dwelling houses and its odour gives notice of its arrival. It seems to be regarded with particular aversion by Chinese who try to get rid of it by killing or driving it away. It is said to be looked upon by some as a very noxious animal, its breath even being reputed to be fatal to man or animals, and certain it is that no cat will touch it and only a very few dogs will attempt to kill it. On the other hand, we have been told that its presence in a house is indicative of coming good luck in money matters and that Chinese like to see it there. It is covered with a soft, fine, almost black fur. Under this on each flank there is a band of stiff closely set bristles, from between which exudes an odorous fluid the product of a particular gland. The two middle superior incisors are hooked, and dentated at the base the lower ones are stunted and elongated. Five small teeth follow on each side of the former and only two follow the latter. There are besides on each jaw three bristled molars, and finally on the upper one a small tuberculated tooth. The snout is greatly elongated and semiprehsile. The nostrils open on the side and are fitted with a valve arrangement which enables the animal to forage under water. The eyes are rudimentary. It is an excellent swimmer and diver. Its gait is peculiar, owing to its short legs it moves along as if on wheels."

We may turn for a moment to the SURGICAL OPERATIONS done in the Government Civil Hospital, it is interesting to compare the figures with those of an Indian Hospital, Table III (p 55 of Report) gives the list of surgical operations. We find 22 amputations, 3 wiring of tibia, 30 tumours removed (20 of these glands), only four operations for cataract, but there is a special Eye Hospital (see below), 2 operations on the nose, 2 lithotomies, only one hydrocele, one hemotocoele, 17 circumcisions, 4 splenectomies for rupture, 1 recovered, 2 laparotomies, 3 operations for hemorrhoids, 14 abscesses, 5 bone necrosis, 15 sinuses, 10 removals of needles, 4 trephining, 2 harelips. Total 215 operations. The daily average number of sick was 91, and the total admissions were 2,745.

Of medical diseases treated we note 188 cases of "FEBRI CULA," 40 cases of enteric (6 deaths), 1 paratyphoid, 101 cases of dysentery (with 12 deaths), 23 cases of plague, 10 deaths. The MALARIAL FEVERS were as follows: 5 quartan, 35 simple tertian, 190 malignant tertian and 3 mixed. There were 35 cases of beriberi, and 101 cases returned under the luminous heading (not yet extinct in India) of "debility."

There were 278 admissions also to the Victoria Hospital for women and children.

In the ASYLUM there were about a daily average strength of 18 patients, 184 were admitted and of these 127 were Chinese, chronic mania was the most common mental trouble.

Dr W B A Moore gives a report on the working of the INFECTIOUS DISEASES Hospital and Hospital Hulk. Of 892 cases, 810 were bubonic, 68 were septic, and 14 pneumonic. Some evidence is given in favour of the use of cyclin injected intravenously. The VICTORIA JAIL STATISTICS are also given, we find a daily average strength of 518, and 18 deaths from natural causes or a death rate per mille of over 34 per mille, which is certainly high compared with Indian provincial averages. In the Jail Hospital there were 38 cases of dysentery and 3 deaths, and 3 fatal cases of tubercle, there were 3 cases of beriberi and one death. We note also that while there were only 76 (daily average) of sick treated in the jail hospital, there were a daily average of 17 treated as "hospital out patients." Dr G M Harston (late of Moorfields) gives an interesting report on the OPHTHALMIC DEPARTMENT of the Tung Wah hospital, which was only opened in the end of 1905. This department was established to afford relief to the "appalling amount of suffering from eye disease among the Chinese," and to teach Chinese students. We quote the following remarks of Dr Harston —

"With regard to the first of these objects, it has always been the opinion of oculists at home and on the Continent that Egypt was *par excellence* the country where eye diseases flourish most. A slight acquaintance with the Chinese calls for a modification of this opinion. The Egyptian Government has recently made most laudable endeavours to cope more effectually with the ravages of eye disease, more especially with the infectious ophthalmias by instituting a system of travelling hospitals and these have been a great success."

In Hongkong these infectious ophthalmias are always extraordinarily prevalent. I may mention here that in 1905 I made a systematic examination of the eyes of the children in three of our large charitable institutions in Hongkong, the result was the astounding revelation that over 70 per cent of the children were affected with Trachoma. I considered it my duty to make a report on the subject to the Sanitary Board. The Board was interested but shrink from adding to its many labours. I can only add that should the Government, which at present is evincing such interest in Hygiene as far as school children are concerned, ever desire to deal with the object, my services, if wished for, will be, as far as the exigencies of private practice permit, at His Excellency's disposal.

The infectious ophthalmias have formed the bulk of eye diseases treated during the year.

This obtains at all eye hospitals, but the relative proportion of those attending at the Tung Wah Hospital for these complaints is far higher than is the case at say the London eye hospitals, not even excepting the Royal London (Moorfields) Ophthalmic Hospital which is on certain days inundated with immigrants dumped in East London.

The main causes of BLINDNESS are trachoma and birth ophthalmia. Most of the operations done have been for entropion (Snellen and Hotz's operations). We see little mention of cataract. The hospital is young and there is a fine field of work before it. Another valuable report is that by Dr W Hunter, the GOVERNMENT BACTERIOLOGIST. We note his opinion that Diphtheria is a comparatively rare disease in S China (as it is also in the plains of India). We may quote the following note on the special investigation into DYSENTERY —

"Over 50 per cent of the cases occurred in children under 10 years of age."

From a strictly bacteriological point of view it has been found impossible in the majority of cases to definitely state whether amœbæ were present or absent. In some cases the amœbæ could be seen without much difficulty, but in many others, in the absence of motility of the parasite no definite conclusion could be drawn. Further, in other cases, amœbæ were present along with bacilli which gave many of the reactions of the so-called *B. dysenteriae*. With these difficulties before us, coupled with the variance of opinion expressed by different authorities, as to what is, and what is not, a dysentery bacillus, we are at present unable to draw any definite conclusions."

Cases of Malta fever originating in the Colony have not been found.

WORM DISEASES are plentiful. *Distoma Sinense* (now called *Opisthorchis Sinensis*) (which our readers may remember was first discovered by the late Surgeon Major D F McConnell, R M S, in a Chinaman in the Calcutta Medical College) is the commonest parasite among the Chinese. We quote the following remarks —

"In the Public Mortuary the worm is constantly met with, inhabiting the bile ducts and gall bladder of cadavers brought there for examination. The number of worms which have been found in a single individual is small, and rarely exceeds 300-400. It is more prevalent in adults than

in children—*vide* Table No VII attached. During the past year, in no case was it considered to be a direct cause of death.

Experiments were made in order to find the mode of infection. Five different varieties of snails, common in Hongkong, were kept in vessels containing the eggs of this worm. The eggs contained active embryos, and were ingested by the snails. In no case could further development of the eggs be traced, the snails passing the eggs unhatched. These molluscs were chosen for the experiments, as the sheep fluke has a snail as its intermediate host. It may be added that the intermediate host of none of the human distomes has been discovered, although much work has been done on the subject by different observers.

No other human Trematodes have been found at the Public Mortuary.

Cestodes—So far these worms have not been found in Chinese cadavers.

Filariasis is rare in Hongkong and no case of guinea worm was found during the year.

The *trichocephalus dysani* is often found, but no case of *trichina spiralis*. Ankylostomes are found "rarely and always in small number." *Ascaris lumbricoides* is common, and is found in 90 per cent. of bodies in the Public Mortuary. *Oxyuris* is not common in Hongkong.

Dr Hunter also gives brief note of his observations on hematozoa. We note that "THE LEISHMAN DONO VAN BODY" is not present in the spleen of the Chinese in Hongkong, "cases of spurious fever are always imported."

The whole report is a valuable one.

MEDICAL SOCIETY

BOMBAY MEDICAL AND PHYSICAL SOCIETY

The Transactions of this Society for April contain three papers of interest. The first is one on two cases of acute form of fatal dysentery, reported by Assistant-Surgeon Prescott of Aden, the heading of the paper adds "possibly due to an organism not yet detected," but no discussion of this point is given and no evidence pointing to any special form of infection. Dr J I De Quadros read notes on three cases of EXTRA UTERINE GESTATION, all three fatal, in the first the rupture was caused by a fall, in the second it followed a severe fit of vomiting and the third was consequent on a severe strain in lifting a heavy weight.

Dr R Row of the Petit Laboratory read a paper on some properties of PLAGUE TOXIN with special reference to the characters of a "salted plague vaccine," which is too technical to be here extracted.

Correspondence

WEIGHT OF VESICAL CALCULI

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—With reference to a question by "Lithotomist" in your September issue, asking to be informed of the weight of the largest vesical calculi removed by suprapubic lithotomy, I may say that the largest stone known to me is one composed of uric acid and urates which is now in the Museum of the Grant Medical College. Its weight is now 27½ ounces, some of the fragments have been lost. When recent the weight was over 30 ounces.

The history of the specimen is as follows—The patient, aged 25 years or thereabouts, suffered from symptoms of stone from childhood, and when admitted to hospital was in a very low state from the prolonged pain of the vesical disease. The great size of the stone does not appear to have been fully recognized before the operation was begun. An attempt was made to extract it by the lateral operation, but this being unsuccessful, the suprapubic operation was performed. Even now it was impossible to extract the stone. By means of some improvised instrument (a craniotomy forceps) the stone was broken in pieces and removed. The patient died about twelve hours after the operation.

The operation was performed in 1876 or 1877 by the late Apothecary Wright at the Tando Atyhar Dispensary near Hyderabad in Sindh.

I should say that the unfractured stone would be about one quarter as large again as the ordinary foetal head.

BOMBAY,
September 30th, 1907

Yours faithfully,
F F GORDON TUCKER,
Captain, I M S

CYLLIN AND RIDEAL WALKER CO EFFICIENT

To the Editor of "THE INDIAN MEDICAL GAZETTE"

DEAR SIR,—We note that the Government of India are to some extent adopting the Rideal Walker method of standardizing disinfectants, as several enquiries have reached us from various Government departments for a "Sponified Cresol with a guaranteed Rideal Walker Co efficient of 3.5 on B Typhosus." As there are numerous disinfectants which claim varying "Carbolic Co efficient," we desire to point out that Messrs Rideal and J T Ainslie Walker expressly state that modifications of the Rideal Walker method (the "garment," the "third," and other modifications) do not give accurate results. Many makers have adopted these methods, and publish the results obtained as "Carbolic Co efficient"—these should not be accepted as Rideal Walker Co efficient.

Some months ago for our own information, we sent to Mr J T Ainslie Walker, F.C.S., for examination, samples of most of the disinfectants which have a wide sale in India and we enclose a list of the Rideal Walker Co efficient he assigns to these. The original reports are in our possession, and may be inspected at our Dalhousie Square premises by any one interested. Being certified by one of the originators of the Rideal Walker method, we assume that these Co efficient quoted are correct.

It is possible that some of these preparations may be offered to purchasing officers with "Carbolic Co efficient" quoted which have been obtained by other than the Rideal Walker test and which are frequently misleading.

We venture to think that the publication of these Co efficient will be of service to those medical men who wish to know exactly the disinfectant value of preparations offered to them, and to secure the maximum of disinfectant efficiency for their expenditure.

Yours faithfully,

SMITH, STANISTREET & CO

CALCUTTA

RIDEAL WALKER CO EFFICIENTS OF THE FOLLOWING DISINFECTANTS (ON BACILLUS TYPHOSUS)

FROM REPORTS BY MR J T AINSLIE WALKER.

Cyllin, Medical	R/W Co efficient	20.00
Disinfectant	"	15.00
Okol (Sunitas Co's)	"	11.50
Izal	"	9.00
Phenolate, Smith, Stanistreet & Co's	"	4.50
Cooper's Fluid	"	3.00
McDougall's Soluble No 5 Carbolic	"	2.90
Disinfecting Fluid	"	2.50
Creolin, Jeye's	"	2.50
Pearson's Antiseptic	"	2.50
Lysol	"	2.50
Little's Soluble Phenyle	"	2.00
Kill germ	"	2.00
Lowe's Disinfectant Fluid	"	1.75
Essett's Fluid	"	1.50
Zotel, Burgoyne Burbidge & Co's	"	1.30
Germocene	"	1.20
Bacter	"	1.00
Carbolic Acid	"	0.50
Lozar	"	0.40
Rowan's Fluid	"	0.10
Lysoform	"	0.10
Eukotas	"	0.02
Antozone	"	0.02
Sunitas Fluid	"	0.02
Phenyle imitations, without brand usually sold as "Phenyle", "Sanitary Fluid," etc., in bazaars, average of 3 samples tested, purchased from different dealers in Calcutta	"	1.70

QUACKERY IN INDIA

To The Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Before entering into the general evils arising from quackery I first of all beg to cite some of its cases which will give an idea of its results and consequent sufferings to the public.

1. A case of an abscess near the knee joint was diagnosed to be the dislocation of that joint by an unqualified bonesetter who tried severe manipulation to reduce his diagnosed dislocation and confined the patient to bandages after application of some country medicine, this brought about severe inflammation and pain into the joint and resulted into an acute arthritis. The abscess afterwards burst and then the patient sought for better medical aid.

2 A case of simple fracture of the lower end of humerus diagnosed to be dislocation of the elbow joint by a quack was subjected to severe manipulation by him, this gave rise to much inflammation and not being cured, the patient resorted to the treatment of a qualified medical man.

3 One quack diagnosed syphilitic iritis to be catarrhal conjunctivitis and dropped two grains argenti nitras solution into the eye, this intensified all the symptoms and then gave much trouble both to the patient and to the qualified man under whose treatment he was afterwards placed.

4 A case of sprain was similarly wrongly diagnosed to be dislocation by a quack who having tried manipulation induced swelling of the part whose motion thereupon remained impaired for a very long time.

5 Some quacks treat cases of plague by strong diaphoretics to lower down the temperature, causing failure of the heart and preventing their patients from breathing longer in this world.

It is a matter of great regret that the people suffer thus unnecessarily owing to non protection of the medical profession in India where quacks are numerous in proportion to qualified medical men. These quacks have neither sense of responsibility nor of duty and care not whether their patients are killed or cured as long as they can get half an anna to pocket.

The natives of India where there is a majority of illiterate persons have no idea of the value of assistance to be obtained from a qualified medical man and seek for treatment wherever they find a board of a so called doctor whether he may be a compounder, a compounder's compounder, a native quack, an apothecary, a druggist, a clerk of a druggist or a dresser (malampattawalla). In most of the villages certain Brahmins pretending to carry on the occupation of a priest, keep some books of materia medica in their houses, to practise medicine and are called Vaidys.

Every profession is overcrowded and every one has to face the problem of life in this age of keen competition and only the fittest can survive whereas the medical profession, though noble, has many intruders owing to its being unprotected by law and even the unfittest finds room enough for himself and manages by hook or crook to keep himself afloat. Men of merit ability and little sense without any scientific or systematic training start at once as medical practitioners. Some of them are called Vaidyas or Hakims, most of whom are not trained at all systematically, they instil into the minds of innocent illiterate persons a few and distinct of English medicine and thus prevent them from going to a qualified medical man. They deceive the people into the belief that English medicines which consist of spirits, etc., will pollute them and are not much effective.

Besides, these Vaidyas, having no knowledge of treatment according to native science, use English medicines. This shows that not only they cheat the poor persons but endanger their lives by their ignorance of the western medical science.

These quacks should not be left to carry on their trade out of mercy lest they may lose their living. These persons who are so called doctors, not only spoil the cases but bring the medical profession as a whole into discredit and degrade its nobleness and sanctity. Under these circumstances all medical men, whether qualified or non qualified are equal because patients when they try medicines of these so called doctors, will not care again to entrust their lives to qualified medical men.

Thus the general public and the real medical profession suffer a great deal under the rule of this just and benign Government which has framed laws for all professions but the medical. Perhaps it is not understood how the attitude of Government in this matter has allowed quackery to trample over the rights of the qualified medical men. In India, where one is required to take out a license for such matters as sale of tobacco, Cannabis Indica, etc., there is no license for practising on human beings even where there is a question of life and death, everybody is left free to prescribe medicines or set up as a medical practitioner.

This is an unjust encroachment on the rights of the real medical profession. I therefore humbly beg to request the editor and several readers of your esteemed journal to be so good as to take up the cause, not only in the interest of the qualified medical men but in the interest of the general public who require to be protected from unnecessary sufferings, and move the authorities to adopt such measures as may be deemed proper to remedy the evils arising therefrom.

I beg, etc, etc,

OLPAD,
October 13th, 1907

GANPATRAM DALSUKHRAM,
Hospital Assistant, Olpad Dispensary

DOCTORS' FEES FOR CANCELLED ENGAGEMENTS

REF. ARTICLE IN OCTOBER 1907 NUMBER

SIR—The Judge is quite within his rights in accepting the "Native doctor's" certificate. He may even dispense with a certificate altogether and rely on the Raja's statement and

exempt him from attendance. No countersignature is necessary to such certificates. They are required only in the case of certificates issued to Government servants as such.

The Judge would not have been justified if he had insisted on the Civil Surgeon's certificate, as it would put the Raja to a lot of unnecessary expense.

2 The Civil Surgeon was not right in altering his tour programme and postponing attendance on his private cases for the sake of giving a certificate to a Raja living 14 miles away. If his appointment was for treating the Raja and giving him medical or surgical aid, then it would be a different matter, in such a case, the Surgeon might claim a fee. I remember some guidance is given in "The Young Practitioner, his Code and Tariff," but I regret I have not the book with me at present.

3 When the question is one of principle, the income of the Raja is irrelevant.

Yours, etc,
DUTY

THE FORMS OF RHEUMATISM

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—I shall feel obliged if you will give the following a place in your paper in reply to Dr. Clarke's criticism of my contribution in Rheumatism in August number.

I was, indeed, not very particular about the nomenclature and took it as it was, and I considered it as a certain manifestation attended with pain, incapacities with certain tissue changes caused by different factors setting up such pathological conditions and treated and found that such and such remedies were proved useful, and I gave out what observations I made, and in the concluding portion of the contribution I said, that chemistry and microscopy were not called to my aid, as I was ill supplied with them and I called upon others to take up that line of work and work out fully. Dr. Clarke made a cursory study and adjudged matters very wrong, as pains and Rheumatism could not possibly be synonymous, and I never meant that. Again, his views are singular and one-sided. I cannot agree with him in saying that there exists no Rheumatism in the Tropics in India. The specific nature of Rheumatism has been variously conjectured since the disease was known as such and no decision whatever has yet been arrived at, and I think College of Physicians was right to retain its place, and not to change it until definitely decided, and surely others participated in the idea, but I never mean by this that further investigations cannot throw further light on the subject to solve the pathology of Rheumatism.

UDAIPUR

R. P. BANERJEE

[We have already commented on Dr. Banerjee's paper and Dr. M. T. Clarke's criticism. Undoubtedly "Rheumatism" is a convenient term, but it is unfortunate that the same word is used to denote things very different. An attack of "Rheumatism" or of "rheumatic pains" is a very different thing from the disease clinically known as "rheumatic fever." We agree with Dr. Clarke that the clinical entity common in hospitals in Europe and called "Rheumatic fever" is rare in the tropics, but as Dr. Banerjee's article has shown, there are very many forms of so called "Rheumatism"—ED, I. M. G.]

MALARIA IN PREGNANCY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Can any of your readers kindly let me know through the columns of your paper the proper way of treating Malarial fever in pregnant women. What other medicines can be used instead of quinine and what amount of antimalarial properties they possess? If quinine is to be given, what precautions should be taken to avoid abortion?

I remain,

Sr,

JODHPUR,
September 29th, 1907

Your most obedient servant,
ABDUR RAZZAK, H. A.,
2nd Branch Dispensary

TREATMENT OF OTORRHOEA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Kindly allow me a space in the corner of your widely circulated journal for insertion of the following lines, regarding a simple remedy for ordinary cases of Otorrhoea, that affect Indian babies and children mostly.

The affected region should first be washed with warm boracic lotion (1 in 40), and quickly dried up. Pack the affected portion of the cavity up with boracic acid in powder through an insufflator when procurable or in its absence a

simple paper tube may serve the purpose. Keep the external opening of the ear always closed with absorbent cotton (antiseptic) that requires to be changed whenever soiled with discharge. When there is no discharge and some sort of uneasiness exists, a few drops of glycerine to be instilled in daily for some time.

Incurious syringing instead of affording any substantial relief, often proves injurious to the sufferer in various ways. So it is advisable to impose the task upon a reliable and cautious hand.

I have invariably noticed children susceptible to cold, are often predisposed to this nasty ear complaint. Therefore in my humble opinion measures adopted for allaying cough will admirably act in these cases.

"Soaking" the affected part with absorbent cotton in order to remove the discharge in lieu of 'Syringing' is sometimes practised. Although efficient and thorough cleanliness can not be guaranteed, I am unable to understate its value when evil effect of incautious syringing is considered. In the latter case the ulcer usually heals up under "Scab formation."

I treat all my cases with Boracic acid and there is never any failure. Recovery is quick and certain.

I am, etc,
SATKARI GANGULI,
Civil Hospital Asst., in charge of
the Jail Hospital, Dumka, S P
DUMKA,
October 1st, 1907

SUPPLY OF VACCINES AND SERUMS IN INDIA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Could not the Directors of Research Laboratories in India be induced to publish from time to time in your columns a list of the anti toxins and vaccines they are prepared to supply to practitioners and civil surgeons? The necessity when it arises for use of such remedies is usually urgent, and unless timely provision is made, their benefits are thrown away, but under present circumstances it is almost impossible to do this for lack of the necessary knowledge where or how they may be obtained. The Lister and other Research Laboratories in England have conferred this boon on the medical profession at home, surely it is not asking too much of the same institutions in India to do likewise. I had always understood that this was the *raison d'être* of their existence. I enclose my card and remain, yours, etc

INTERESTED

[We have taken up this matter, and by the courtesy of the Directors of the various Laboratories in India we are able to announce that a full account of this subject will appear in our next issue.—ED, I M G.]

Service Notes

THE following new rules for the wearing of Medals and Decorations has been published in Army Orders as an annexure to India Army Order No 493 of 1907—

Review Order

Riband of a Grand Cross and Badge

All Stars of Orders

Knights Commanders and Commanders of one Order will wear the Riband and Badge of that Order round the neck, and Knights Commanders and Commanders of two or more Orders will wear the Riband and Badge of the senior Order round the neck, and may also wear round the neck the Ribands and Badges of one or more of the other Orders.

When the Collar is worn, the Riband of the Grand Cross of the same Order is not worn.

Review Order, Staff in blue

Ribands of the width of the Companionship or Membership of Orders, and of Medals, half inch in length on the breast.

Ribands of the width assigned to a Knight Grand Cross, Knight Grand Commander, Knight Commander or Commander of an Order are not worn.

The Star of the senior Order only is usually to be worn to the left and just clear of the left hand side row of buttons, but, when specially directed, the Star of another Order may be substituted. (b) (c)

Mess Dress

Only miniature Decorations and Medals, which will be worn on the jacket. Miniature Decorations will be of the same size as miniature Medals and Knights Grand Cross Knights Grand Commanders, Knights Commanders or Commanders will wear the miniature of the Companionship or Membership. (a) (b) (c) (d)

Undress and Service Dress

Only Ribands of the width of the Companionship or Membership of Orders and of Medals, half inch in length on the breast. (b) (c)

Evening Dress, plain clothes

Riband of a Grand Cross and Badge

Star of the above Order, and Stars of one or more other Orders, on public and official occasions.

Knights Commanders and Commanders of one Order, of which the Star is worn, will wear the Riband and Badge of that Order round the neck, and Knights Commanders and Commanders of two or more Orders, of which the Stars are worn, will wear the Riband and Badge of the senior Order round the neck, and may also wear round the neck the Ribands and Badges of one or more of the other Orders.

Miniature Decorations and Medals on the lapel of the coat. (a) (b) (c) (d)

NOTE—(a) The Order of Merit is never worn in miniature, and on all occasions must be worn round the neck.

(b) Foreign Decorations which are permitted to be worn on certain occasions only will be worn in Review Order and in Evening Dress, Plain Clothes, on the occasions specified in the letter of authority but the Ribands of such decorations will not be worn on the breast in Review Order, Staff in blue, or in Undress and Service Dress. The Star of such a decoration will only be worn in Review Order, Staff in blue, when specially directed. Miniatures of such decorations may be worn on all occasions in Mess Dress and Evening Dress, Plain Clothes.

(c) A Foreign Medal, the wearing of which has been sanctioned by His Majesty, or its Riband or Miniature, will be worn in all Orders of Dress in the same way as British Medals.

(d) The buckle will be omitted from the miniatures of the 'Bath' and 'St Michael and St George' when worn by Knights Grand Cross and Knights Commanders of those Orders.

LIEUTENANT R H BOTT, I M S, received charge from Captain H M Oruddas, I M S, of the Civil Station of Mardan on 30th September 1907.

CAPTAIN G. I DAVYS, I M S, resumed charge of the office of Assistant Plague Medical Officer, on 9th September 1907.

LIEUTENANT COLONEL B B GRAYFOOT, M D, I M S, is granted from the date of relief, such privilege leave of absence as may be due to him on that date in combination with furlough for such period as may bring the combined period of absence up to twelve months.

LIEUTENANT COLONEL H W STEVENSON, I M S, has been allowed by His Majesty's Secretary of State for India an extension of furlough on medical certificate for two months.

DR H A MACFOD, Civil Surgeon, Bristi, was granted three months privilege leave from 20th November 1907.

CAPTAIN R KELSALL, M B, I M S, on Special Plague duty at Rangoon, is appointed to officiate as Health Officer, Rangoon Municipality, in addition to his own duties during the absence on leave of Major C E Williams, M D, D P H, I M S, or until further orders.

THE services of Captain T H Gloster, I M S, were placed at the disposal of the Government of India on 27th September 1907.

CAPTAIN A F W KING, I M S (Bombay), has been granted two years' combined leave.

THE estate of the late Sir Wm Broadbent, Bart., M D, has been valued at £86,000.

CAPTAIN E C HEPPER, I M S, Special Plague Officer, Peshawar, in addition to retaining his own duties, assumed charge of the Civil Medical duties of the Peshawar District, on the afternoon of the 20th of August 1907, relieving Lieutenant Colonel G W P Dennys, I M S, granted privilege leave.

THE following Lieutenants are promoted Captains, I M S, from 1st September 1907—

Horace Sidney Matson
Donald Steel
Francis Hugh Stewart.
Hampton Atkinson Dougan
Alexander Cameron
Alfred Henry Proctor
Robert Tait Wells
Ian Macpherson Macrae
Charles Cecil Connock Shaw, M D
Roderick Deni MacGregor
James William Herbert Babington
Alexander Spalding Mackie Peebles
Francis Broughton Shettle

HIS Excellency the Viceroy and Governor General has been pleased to appoint Assistant-Surgeon Rai Hira Lal Basu, Bahadur, of the Bengal Establishment, to be an Honorary Assistant-Surgeon on His Excellency's personal staff

CAPTAIN M CORRY, I M S, made over charge of the duties of Superintendent, Lyallpur District Jail, to Assistant Surgeon B C Ghosh on the afternoon of the 12th August 1907

MILITARY-ASSISTANT SURGEON J R FOY, I S M D, is appointed Medical Officer, Lawrence Asylum, Goragali, Murree Hills

THE services of Captain G H Stewart, I M S, are placed permanently at the disposal of the Government of Burma

THE Kaid Maclean still in the hands of the Brigand Raisuli is a son of Deputy Inspector General A Maclean, R N still alive, aged 95

CONSEQUENT on the death of Major T W A Fullarton, Captain J N Walker, I M S, is confirmed as a Civil Surgeon (2nd class)

ON the return of Surgeon General Bomford, C I E, I M S, Colonel Wilkie, I V S, returned to his post as Inspector General of Civil Hospitals, E B & A, and Lieutenant Colonel R N Campbell, I M S, reverted to Dacer Major A R Anderson I M S, to Rampore Borha, and Captain Gidney, I M S, to Dhubai

CAPTAIN L P STEPHEN, M B, D P H, D T M & H I M S, is appointed to act as Professor of Physiology and Hygiene at the Grant Medical College, Bombay, during the absence of Captain Hutchinson, I M S, on leave

THE King has approved of the retirement of Lieutenant Colonel W Cortes, M D, on 4th July 1907

HIS Excellency the Governor of Bombay in Council is pleased to appoint Major S Evans, M B, I M S, on return to duty, to act as Deputy Sanitary Commissioner for the Central Registration District, *vice* Major A Hooton, I M S, in addition to his own duties, pending further orders

HIS Excellency the Governor of Bombay in Council is pleased to appoint Major A Hooton, M B, C M I M S, on relief by Major S Evans, M B, I M S, to act as Medical Officer to the Kathiawar Political Agency, and in charge West Hospital, Rajkot, pending further orders

HIS Excellency the Governor of Bombay in Council is pleased to appoint (with reference to Government Notification No 5297, dated the 28th August 1907), Major A F W King, I M S, to be Civil Surgeon, Sukkur, *vice* Captain T S Novis, I M S

CAPTAIN C C MURISON I M S, to continue to act as Civil Surgeon, Sukkur, during the absence on leave of Major A F W King, I M S, or pending further orders

LIEUTENANT J F BOYD, I M S, took over the Civil Medical duties of Jhelum District from Lieutenant K W MacKenzie, I M S, on 30th September 1907

THE undermentioned officer of the Indian Medical Service, having satisfactorily completed his courses at the Royal Army Medical College and at Aldershot, has been finally admitted to the service. His commission bears date the 2nd February 1907, and he will rank as senior of the Indian Medical Service officers whose commissions bear the same date (*vide* Notification No 71, dated 27th September 1907) -- Owen Alfred Rowland Berkeley Hill

CAPTAIN V CONDON, I M S, on return from furlough, is posted as Residency Surgeon, Mewar

DR H COGILL, M R C S, is appointed Medical Officer on the staff of the new Governor of Bombay

MANY of our readers will remember the days when the Army Medical Service was boycotted and but few candidates appeared. The Army Medical Department of the United States of America appear to be in the same condition now. Last session a new Medical department reorganisation bill was defeated and the following is one of the results -- At the examination held in July last for 29 vacancies only 26 candidates appeared, 12 withdrew, 14 competed and only 3 were successful

A similar tale could be told of the previous competition. The time has come for Congress to realize the state of affairs

THE Government of India have approved of officers of the Indian Medical Service counting up to one year of the time spent on half pay for promotion and pension if their transfer to the half-pay list was due to medical unfitness caused by civil duty while in civil employ

CAPTAIN E C HEPPER, I M S, is posted as Agency Surgeon in the Khyber Agency

CAPTAIN C S LOWSON, I M S, took over charge of the Central Jail, Yeravda, on 18th September 1907

THE services of Lieutenant Colonel C Mactaggart I M S, Inspector General of Prisons, U P, have been placed at the disposal of the Government of India for employment on the new Factory Commission

THE services of Captain L P Stephen, I M S, M B, D P H, have been placed at the disposal of the Government of Bombay

MAJOR G T BIRDWOOD, I M S, has obtained an extension of leave for two months

CAPTAIN H W ILLIUS, I M S, is appointed to Plague duty in the United Provinces

CAPTAIN G TATE, I M S, took over charge of Civil duties of Kohat from Lieutenant Colonel J W Rodgers, I M S, on 17th September

CAPTAIN H D PEILE, I M S, Superintendent, Central Prison, Farrukhabad, to officiate as Civil Surgeon of that district in addition to his own duties, is a temporary measure, *vice* Major J G Hulbert, I M S, granted leave

CAPTAIN C A GILL I M S, Assistant Plague Medical Officer, Jhelum, is transferred to Lahore in the same capacity, with effect from the forenoon of the 19th August 1907

ON return from the privilege leave of absence granted to him in notification No 709, dated the 28th of August 1907, Captain M Corry, I M S, Civil Surgeon, Lyallpur, resumed charge of his duties on the forenoon of the 13th of September 1907, relieving Assistant Surgeon B C Ghosh

ON relinquishing charge of the office of Assistant Plague Medical Officer, Delhi, Captain V H Roberts I M S, was appointed District Plague Medical Officer Gujrat, where he assumed charge of his duties on the afternoon of the 16th August 1907

LIEUTENANT N M WILSON, I M S, Assistant Plague Medical Officer, Jullundur, was transferred to Sialkot as District Plague Medical Officer and assumed charge of his duties on the forenoon of the 17th August 1907

CAPTAIN H WATTS, I M S, Assistant Plague Medical Officer, Jullundur, was transferred to Ambala in the same capacity and assumed charge of his duties on the forenoon of the 17th August 1907

CAPTAIN A K LAUDDIE, I M S, District Plague Medical Officer, Karnal, was transferred to Gujranwala as Assistant Plague Medical Officer and assumed charge of his duties on the forenoon of the 21st August 1907

DR A C DeRENZI, Assistant Plague Medical Officer, Rawalpindi, was transferred to Amritsar in the same capacity and assumed charge of his duties on the afternoon of the 23rd August 1907

CAPTAIN M S IRANI, I M S, Assistant Plague Medical Officer, Jullundur, was transferred to Gujranwala in the same capacity and assumed charge of his duties on the forenoon of the 10th September 1907

CAPTAIN T G N STOKES, I M S, Civil Surgeon, Hoshangabad, who was granted furlough on medical certificate in Order No 1807, dated the 18th December 1906, was granted, by His Majesty's Secretary of State for India, study leave, from the 15th January 1907 to the 15th May 1907, both dates inclusive

PRIVILEGE leave for three months combined with furlough on medical certificate for nine months, under Articles 233 (2), 260 and 303 (a) of the Civil Service Regulations, is granted to Captain G Fowler, I M S, Officiating Civil Surgeon, Hoshangabad, with effect from the date on which he may avail himself of it

On return from the leave granted him by Order No 1807, dated the 18th December 1906, Captain T G N Stokes, I M S, Civil Surgeon, is posted to the Hoshangabad District

The services of Captain W Lapsley, M B, I M S, are placed temporarily at the disposal of the Government of the United Provinces

The services of Captain J N Walker, I M S, are placed permanently at the disposal of the Government of the United Provinces

The services of Captain W V Coppinger, M D, I M S, are placed permanently at the disposal of the Government of Bengal, with effect from the 2nd September 1907

LIEUTENANT COLONEL W B BANNERMAN, M D, I M S, Director of the Bombay Bacteriological Laboratory, is granted privilege leave for one month and twenty days with furlough out of India for eighteen months in continuation, with effect from the 31st August 1907

CAPTAIN W G LISTON, M D, I M S, is appointed to hold charge of the current duties of the office of the Director of the Bombay Bacteriological Laboratory in addition to his own special duties during the absence on leave of Lieutenant Colonel W B Bannerman, M B, I M S, or until further orders

CAPTAIN W G LISTON M D I M S, was on privilege leave from the 1st July to the 30th August 1907

The Home Department notification No 660, dated the 30th April 1907, granting him privilege leave for three months, with effect from the 6th June 1907, is hereby cancelled

At the recent examination for appointments in the Indian Medical Service (see I M G, p 396), three students of University College, Bristol, were successful, Mr V B Green Armitage gaining second place with 3,834 marks, Mr Francis Shingleton Smith M B, Cantab, tenth place, with 3,410 marks, and Mr A N Thomas, fourteenth place, with 3,283 marks

MAJOR J G HULBERT, I M S, a Civil Surgeon, U P, has been granted combined leave for one year

LIEUTENANT COLONEL T GRAINGER I M S Civil Surgeon, Mozafferpore, has been directed to attend the office of the P M O, Presidency Brigade, to qualify for promotion

The King has also approved of the retirement from the service of the undermentioned officers —

Lieutenant Colonel Charles Lethbridge Swaine, I M S Dated 23rd July 1907

Lieutenant Colonel Nityananda Chatterjee, I M S Dated 18th June 1907

Lieutenant Colonel Alexander Vass Anderson, I M S, M B Dated 19th July 1907

Lieutenant Colonel Herbert Mackinlay Morris, I M S Dated 14th May 1907

The undermentioned officers have been permitted by the Secretary of State for India to retire from the service, subject to His Majesty's approval, with effect from the dates specified —

Lieutenant-Colonel Allan Rupert Postance Russell, Indian Medical Service, Bengal, 11th October 1907

Lieutenant Colonel James Scott, M B, Indian Medical Service, Madras, 23rd October 1907

CAPTAIN CHARLES SELMOUR PARKER, M B, F.R.C.S Indian Medical Service Bengal, has been transferred by the Secretary of State for India to the temporary Half Pay List, subject to His Majesty's approval, with effect from the 28th August 1907

The following Senior Assistant Surgeons, with the honorary rank of Lieutenant, are promoted to be Senior Assistant Surgeons, with the honorary rank of Captain —

Dated 5th June 1907

Walter David Bartley (super-numerary)
Edwin Weston
David Robertson
Cyprian Terence Montrose Nicholas
Henry William George King
George Robert Allan
Robert Hall Nisbet
Albert Robert Goddard Rodrigues

To be Senior Assistant Surgeon, with the honorary rank of Lieutenant

First Class Assistant Surgeon Joseph Hiscox Williamson Dated 5th June 1907

CAPTAIN T S ROSS, I M S, who got ten months' combined leave has applied for six months' extension of furlough

ROYAL ARMY MEDICAL CORPS—SPECIALISTS—The following officers are appointed Specialists in the undermentioned subjects under the provisions of India Army Order No 307 of 1st July 1907, with effect from the dates noted against their names —

- | | |
|---|--------------------|
| (a) Electrical Science— | |
| Major M Boyle | 16th August 1907 |
| Major J Grech | 16th August 1907 |
| Captain A H Waring | 16th August 1907 |
| Captain T S Coats | 1st August 1907 |
| (b) Otolaryngology and Rhinology— | |
| Major G St C Thom | 1st September 1907 |
| (c) Midwifery and diseases of women and children— | |
| Captain H G Martin | 1st August 1907 |
| Captain S O Hall | 1st August 1907 |

INDIAN MEDICAL SERVICE—SPECIALISTS—The following officers are appointed Specialists in the undermentioned subjects under the provisions of India Army Order No 307 of 1st July 1907, with effect from the dates noted against their names —

- | | |
|--|----------------------|
| (a) Advanced operative surgery— | |
| 4th (Quetta) Division, Captain V B Nesfield, from date of joining Division | |
| (b) Ophthalmology— | |
| Captain A E J Lister | from date of joining |
| 7th (Meerut) Division | |
| (c) Electrical Science— | |
| Captain P G Erston | 15th August 1907 |

CAPTAIN W LAPSLEY, I M S, has been appointed officiating Civil Surgeon of Azamgarh, U P

The following correspondence with reference to study leave is republished for information —

No 770, dated Simla, the 30th July 1907

From—J C Fergusson, Esq, Under Secretary to the Government of India, Home Department,
To—The Secretary to the Government of Bengal, Municipal Department

In continuation of the Home Department letter No 442, dated the 18th May 1907, I am directed to forward, for information, a copy of the letter in which it is laid down that the limitation to two years of the total period of study leave combined with other leave out of India, imposed by rule 6 of the Study Leave Rules does not apply to officers of the Indian Medical Service subject to the Civil Leave Rules

No 4242P, dated Simla, the 8th July 1907

From—H Heseltine Esq, Assistant Secretary to the Government of India Finance Department,
To—The Comptroller, India Treasuries

In reply to your letter No G A 76, dated the 8th April 1907, I am directed to say that the limitation to two years of the total period of study leave, combined with other leave out of India imposed on officers of the Indian Medical Service by rule 6 of the Study Leave Rules, as recently amended, does not apply to the case of an officer of the Indian Medical Service, subject to the Civil Leave Rules

No G A 76, dated Calcutta, the 8th April 1907

From—J A Robertson, Esq, Comptroller, India Treasuries,

To—The Secretary to the Government of India in the Finance Department,

With reference to the restriction of two years' total absence, imposed on officers of the Indian Medical Service who are under the Leave Rules of 1886 for the Indian Army and are proceeding on study leave, combined with other leave (rule 6 of the Government of India, Military Supply Department Notification No 16, dated the 15th March 1907), I have the honour to enquire whether there is any such limit to total absence in the case of an officer of the Indian Medical Service, subject to the Civil Leave Rules

The case which has given rise to this enquiry is that of Major A L D, I M S, an Agency Surgeon of the 2nd class who was granted privilege leave for three months, combined with furlough for six months and study leave for one year, with effect from 11th March 1907. The officer is under Civil Leave Rules, and the furlough granted may, in ordinary circumstances be extended, without medical certificate, by one year and three months and on medical certificate

by three months more, as ordinary furlough, and further extended by one year, as furlough other than ordinary. The question that now arises and is submitted for orders, is whether the above extensions may be granted irrespective of the study leave for one year, or whether any maximum limit should be imposed, of total absence from duty including all kinds of leave.

No 751, dated Simla, the 26th July 1907

From—J O Fergusson, Esq., Under Secretary to the Government of India, Home Department.

To—The Secretary to the Government of Bengal, Municipal (Medical) Department.

I am directed to forward, for information, a copy of a letter to the Accountant General, Bombay, conveying the decision of the Government of India, that study leave granted to an officer of the Indian Medical Service, officiating in civil employ, does not operate as a break cancelling past officiating service within the meaning of article 35 (e) (2) of the Civil Service Regulations, but that it does not count towards the three years' continuous officiating service necessary to entitle an officer to the benefit of the civil leave rules.

No G A 5502, dated Bombay, the 7th February 1907

From—F C Harrison, Esq., ICS, Accountant General, Bombay.

To—The Secretary to the Government of India, Finance Department.

I have the honour to enquire whether study leave granted to an officer of the Indian Medical Service, officiating in civil employ, operates as a break within the meaning of rule 2 under clause (e) of article 35 of the Civil Service Regulations. If not, whether it counts towards the three years necessary for confirmation in civil employ.

2 The case which has given rise to the present reference is that of Captain A G, I M S, Acting Civil Surgeon, Kaiwat, who intends to take study leave in combination with privilege leave.

No 4043P, dated Simla, the 30th June 1907

From—H Heseltine, Esq., Assistant Secretary to the Government of India, Finance Department.

To—The Accountant General, Bombay.

In reply to your letter No G A 5502, dated the 7th February 1907, I am directed to say that the Government of India have decided that study leave granted to an officer of the Indian Medical Service officiating in civil employ shall not operate as a break within the meaning of article 35 (e) (2) of the Civil Service Regulations, but that it is not to count towards the three years' continuous officiating service necessary to entitle an officer to be treated for the purposes of the leave rules as in permanent civil employ.

THE following officers of the Indian Medical Service, having satisfactorily completed their courses at the Royal Army Medical College, and at Aldershot, have been finally admitted to the service. Their commissions will bear date the 2nd February 1907—

Walter Ludwell Hainett, M A, M B (Cantab), F R C S, Eng.
John Drummond Sands, B A, M B, B Ch, B A O, Dub (L M, Rotunda).
William Percival Gould Williams, M R C P, M R C S (St Thomas).
Sivax Byamjee Mehta, F R C S, Ed, and Bombay, L M & S.
Alexander Harper Napier M B (Glas).
Gilbert Holroyd, M B, B Ch (Cantab), M R C S (St Barts).
Arnold Egbert Grisewood, M B, B Ch (Liver).
David Livingstone Graham, M B, B Ch (Glas).
Pheraya Kharsedji, Tarapore, M R C S (Guys).
Roger Bughouse Nicholson.
George Staunton Husband, M B, B Ch, (Ed).
James Alexander Cruickshank, M B, Ch B (Ed).
John Alfred Steele Phillips.
Dwarkanath Dharmaji Kamat, L R C P, L R C S (Edin), & L F P S (Glas).
Sites Chunder Chuckerbutty.
Ernest David Simson.
William Edward Rees Williams.
Alexander Frederick Babonau.
Patrick Manson Rennie, M B, B Ch (Aber).
Harold Mundee Inman, B A, Oxon, M R C S.
Sorabji Jamsaji Bhatnagar, L R C P (Ed), L F P S (Glas).
Frederick O'Dowde Fawcett, L R C S.
The above are the qualifications of such as can be found in the Medical Directory, 1907.

LIEUTENANT COLONEL O LETHBRIDGE SWAINE, I M S, was permitted to retire with effect from 23rd July 1907. Lieutenant Colonel Swaine entered the service on 31st March 1876, and has been employed as a Civil Surgeon in the Central Provinces for many years past. He was educated at Aberdeen University, (M D 1889, M B, C M, 1874), and went on leave on 17th October 1905.

MAJOR W J NIDLOCK, I M S, received one month's more extension of furlough, getting in all two years' furlough.

CAPTAIN W C LONG, I M S, is due back from furlough on 16th February 1908.

CAPTAIN S A RUSSAK, I M S, got three months' privilege leave from 24th September 1907.

CAPTAIN S BOSI, I M S, got five weeks' privilege leave from 11th November 1907.

THE services of Captain L P Stephen, M B, I M S, are placed temporarily at the disposal of the Government of Bombay.

THE services of Captain G E Charles, M I, I M S, are replaced at the disposal of His Excellency the Commander in Chief in India.

CAPTAIN C W F MELVILLE, M B, I M S, is appointed to officiate as Professor of Anatomy, Lahore Medical College, with effect from the 20th September 1907, during the absence on furlough of Major J C Lamont, M B, I M S (Bengal), or until further orders.

CAPTAIN W S PATTON, M B, I M S, is granted privilege leave for two months, with effect from the date on which he avails himself of it.

ON return from the privilege leave of absence granted to him in notification No 688, dated the 20th of August 1907, Captain J G G Swan, I M S, resumed charge of his duties as officiating Civil Surgeon, Shahpur, on the forenoon of the 5th of September 1907, relieving Assistant-Surgeon Firoz ud din.

MAJOR P ST O MORE, I M S, Civil Surgeon, Attock, obtained privilege leave of absence for 26 days, under article 260 of the Civil Service Regulations, with effect from the forenoon of the 23rd of February to the afternoon of the 20th of March 1907, both days inclusive.

CAPTAIN G P T GROUPE, I M S, Assistant Plague Medical Officer, Jullundur, was transferred to Ferozepore in the same capacity, with effect from the forenoon of the 12th August 1907.

CAPTAIN T H GLOSTER, I M S, Assistant Plague Officer, Simla, is placed on special duty in the Punjab, with effect from the afternoon of the 17th August 1907.

THE services of Captain C W F Melville, I M S, officiating Professor of Pathology and Materia Medica, Medical College, Lahore, are replaced at the disposal of the Government of India, in the Home Department, with effect from the date on which he is relieved by Major H G Melville.

THE services of Captain G H Stewart, I M S, have been placed permanently at the disposal of the Government of Burma.

CAPTAIN A C MACGILCHRIST, M B, I M S, Officiating Civil Surgeon of the second class in Bengal, is confirmed in the appointment, with effect from the 1st July 1906.

MAJOR E E WATERS, I M S, Officiating Civil Surgeon of Muzshidabad, was allowed privilege leave for nineteen days, under article 260 of the Civil Service Regulations, with effect from the 23rd September 1907, or any subsequent date on which he may avail himself of it and has since joined Cuttack as Civil Surgeon.

MAJOR C J ROBERTSON MILNE, I M S, Superintendent of the Central Lunatic Asylum at Bethampur, is appointed to act as Civil Surgeon of Muzshidabad, in addition to his own duties, during the absence, on leave, of Major E E Waters, I M S, or until relief by Lieutenant Colonel A H Nott, I M S.

LIEUTENANT COLONEL W F THOMAS, I M S, acted as Superintendent of the Central Jail, Trichinopoly, for three months from 8th July 1907.

MAJOR F C PEREIRA, I M S, applied for one year's continued leave from 1st November 1907.

MAJOR H ST J FRASER, I M S, got an year's leave to Europe on medical certificate from 25th September 1907.

LADY MINTO'S INDIAN NURSING ASSOCIATION—The following facts concerning the Association are republished for the information of officers and others.

The Association has been founded with the object of supplying fully trained and experienced nurses throughout Upper India and Burma. The up country and Punjab Nursing Associations have been incorporated in it.

RATES OF NURSING SISTER'S FEES

Non subscribers

All classes of cases Rs 8 per diem

Subscribers

	Income over Rs 500 per mensem	Incomes under Rs 500 per mensem
	Rs (per diem)	R (per diem)
Ordinary cases	4	3
Infectious cases	4	3
Midwifery cases	5	3

Slight alterations in the above fees to suit local conditions have been sanctioned for Eastern Bengal and Assam and Central India.

Midwifery will only be undertaken in specially urgent cases.

After attending infectious cases nurses will be required to undergo a period of quarantine according to the nature of the illness, and this period will be charged for.

A return fare 2nd class between the Nursing Home and the patient's residence will be charged for each Nursing Sister employed *plus* actual expenses incurred for conveyance by road or river as well as any incidental charges such as those for telegrams, postage, etc.

Suitable arrangements must be made for free board and lodging at the patient's residence. The nurses will be under strict regulations as regards their duty, hours of work, rest, recreation and conduct generally, and each Nursing Sister will have a copy of the rules in her possession.

RATES OF SUBSCRIPTION

For those whose income is Rs 500
per mensem or under Rs 10 per annum

For those whose income exceeds
Rs 500 per mensem Rs 20 per annum

A subscriber on paying the above amount becomes a member of the Association, can vote at the Annual Meeting, has first claim on the services of the Nursing Sisters at greatly reduced rates. The subscription includes all *bona fide* members of the subscriber's family.

SPECIAL SUBSCRIPTION RATES FOR REGIMENTS

Regiments of the British Service Rs 100 per annum

Regiments of the Indian Army " 50 " "

These subscriptions entitle all officers of the regiment and their families to the full benefit of the Association, the fees being regulated according to the income of the individual concerned.

All subscriptions should be paid to the Honorary Secretary of the Provincial Branch concerned by 31st March in each year.

Branches

The following have now been established —

Province	Centre	When nurses are required address as below
Punjab, North West Frontier Province	Kasauli	Lady Superintendent
United Provinces	Naini Tal (summer)	Ditto
	Bareilly (winter)	
Eastern Bengal and Assam	Shillong	Honorary Secretary
Central Provinces	Jalpaiguri	Ditto
	Nagpur	
Baluchistan	Quetta	Ditto
Rajputana	Ajmer	Ditto

Any further information required may be obtained from the Chief Lady Superintendent, Mrs E Davies whose address will be Viceregal Lodge, Simla, from April to October and Government House, Calcutta from November to March.

THERAPEUTIC NOTES AND PREPARATIONS

'TABLOID' 'GINGAMINT' (SODA MINT COMPOUND)

EACH contains Sodium Bicarbonate gr 5, Ammonium Bicarbonate gr 1/12, with Gingerine Saccharine and Oil of Peppermint.

This preparation is a valuable antacid and stomachic employed in the relief of dyspepsia, nausea, heartburn and flatulence. It promotes appetite and digestion, relieves griping and produces a diffusible stimulant effect. Direction—One to four swallowed with a little water, or one dissolved slowly in the mouth, from time to time.

'Tabloid' 'Gingamint' is issued in bottles of 25 and 100.

THE SANATOGEN Company call our attention to the good results obtained by the use of this well known food preparation in cases of debility after long illnesses or fever attacks. Its merits are well known. Sanatogen is stocked by the leading wholesale chemists in India, such as Messrs Kemp & Co., Bombay; Smith, Stanistreet & Co., Calcutta, and W. E. Smith & Co., Madras.

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co., Calcutta.

Annual Subscriptions to "*The Indian Medical Gazette*," Rs 12, including postage, in India Rs 14, including postage, abroad.

BOOKS, REPORTS, &c, RECEIVED —

Diagnosics of the Diseases of Children. By Le Grand Kerr, M.D. Octavo of 542 pages containing 159 illustrations. Cloth, 21s net (Saunders, Ld.).

Surgical Diagnosis. By Daniel N. Elsendorath, M.D., 776 pages with 482 original illustrations, 15 of them in colours. Cloth 28s net (Saunders, Ld.).

Atlas and Epitome of Diseases of Children. By Dr R. Hecker and Dr J. Trumpp. Authorized Translation from the German. Edited by Isaac A. Abt, M.D. With 48 coloured plates and 147 black and white illustrations. Cloth, 21s net (Saunders, Ld.).

Gynecology and Abdominal Surgery. Edited by Howard A. Kelly, M.D., F.R.C.S. (Hon. Ld.), of Johns Hopkins University, Baltimore, and Charles P. Noble, M.D., of Philadelphia. Illustrated by Max Brodel, Hermann, Becker and others. Volume I containing 651 pages and 405 illustrations. Cloth, 25s net (Saunders, Ld.).

A Laboratory Manual of Invertebrate Zoology. By Gilman A. Drew, 112 p. Octavo of 90 pages. Cloth, 5s net (Saunders, Ld.).

A Manual of Diseases of the Nose, Throat and Ear. By F. B. Gleason, M.D., LL.D. Containing 556 pages and 260 illustrations. Limp leather, 1s net (Saunders, Ld.).

The Treatment of the Diseases of Children. By Charles Gilmore Kelly, M.D. Octavo of 597 pages, containing 71 illustrations. Cloth, 21s net (Saunders, Ld.).

Practical Fever Nursing. By Edward O. Register, M.D. Octavo of 352 pages, containing 65 illustrations. Cloth 12s net (Saunders & Co.).

Malaria, a factor in History. By Jones, Ross and Ellett. (Macmillan & Bowes, Cambridge.)

The Journal Penang Anti-Opium Association.

The Quarterly Journal of Medicine. No. 1. Clarendon Press Oxford.

Physical Methods in Heart Disease. By Dampier Bennett. (J. Wright & Co.).

Practical Medicine Series, 1907 Vol IV Gynecology (Gillies & Co., Glasgow.)

Obstetrics (Gillies & Co., Glasgow.)

D. J. Cunningham's Practical Anatomy 2 Vols (Young J. Pentland.)

Muir and Ritchie's Bacteriology 4th Ed (Young J. Pentland.)

L. Parkes and Kenwood's Hygiene and Public Health. 3rd Ed. (H. K. Lewis.)

Madras Hospital Report, 1906

Cancer. By Sherman Bigg. Baillière, Tindall & Cox.

LETTERS, COMMUNICATIONS, RECEIVED FROM —

Capt McCarrison, M.S., Chitral, Capt Vignani, M.S., Calcutta.

Major Enticem, M.S., Melkita, Lt Colonel D. G. Crawford, M.S.,

Hughell C. H. A. Rukhmal, Surat, Capt Brayne, M.S., R. Pindl,

Major Lamb, M.S., Kasauli, Capt Glen Liston, M.S., Bombay, Capt

Christophers, M.S., Madras, Major Newman, M.S., Ranchi, Dr B. N.

Ghosh, Calcutta, Colonel R. Macrae, M.S., Darjeeling, Dr Landon,

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